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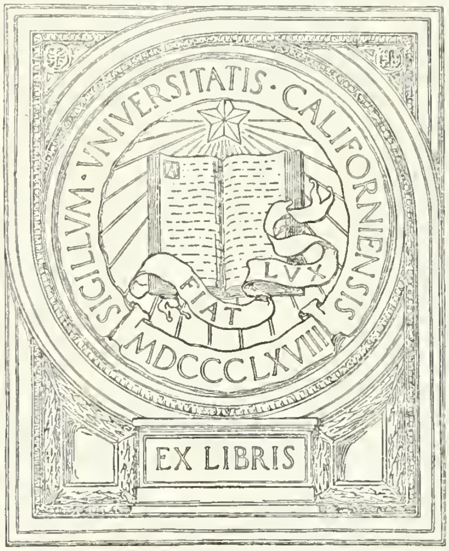

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URETERAL CALCULI—

AN UNUSUAL CASE WITH FIVE STONES IN ONE URETER*

HUGH T. BEACHAM, M. D.†
AND
W. D. BEACHAM, M. D.‡
NEW ORLEANS

Ureteric stone in the aged is unusual and multiple ureteral calculi in elderly women are very rare. Huggins, of the Cleveland Clinic, in a study of 350 cases of stone in the ureter found the eldest female to be 67 years. Joly, in his work entitled Stone and Calculous Disease of the Urinary Organs, shows a photograph of six facetted calculi removed from a right ureter. The sex of the patient is not designated. He mentioned a person above 70 years of age who was operated upon for ureteral calculus at St. Peter's Hospital for Stone in England. Bumpus and Scholl found three cases above 70 years of age in a series of 880 cases of stone in the ureter treated at the Mayo Clinic. Herman, in his textbook on urology, presents a photograph of an x-ray film showing five stones in one ureter. The patient was operated upon at the Pennsylvania Hospital.

Your attention is called to this case because of the number of ureteral stones present, the patient's age, and the management employed.

CASE REPORT

Mrs. W. P., aged 72 years, native and resident of Texas, decipara, widow, was first seen on May 19, 1944, at which time she complained of "blood and pus in the urine." The present history revealed that gross hematuria had been observed "off and on for about one month" during which time the urinary index was D 15-20/N 1-5. There had been relatively little pain although at times it manifested itself as "soreness in the bladder region" and burning upon micturition. At no time had opiates been required. Nausea and vomiting had occurred and five or six times the oral temperature reached 100° F. Chills had not been experienced. A loss of five pounds of weight transpired in the course of a year.

The past history disclosed that the first attack of "kidney and bladder trouble" was experienced in the summer of 1939. At that time pus was found in the urine and treated with urotropin for a period of "two or three weeks." She stated that x-ray films were not obtained then. The second episode took place in December, 1943, and was accompanied by fever, pyuria, and gross hematuria. Again, roentgenographic and cystoscopic studies are said to have been omitted. She received sulfathiazole orally for about one week. There have been no operations, injuries, or other known serious illnesses. Urinary stones have not passed.

According to the obstetric history there have been twelve pregnancies, of which ten reached term and resulted in the delivery of normal offspring. Two of the labors, the first and last, were rather long but were otherwise uncomplicated. Two pregnancies terminated spontaneously at about the eighth week without complications. The husband died of "heart disease." The menopause produced no difficulties and there has been no postmenopausal uterine bleeding or vaginal discharge.

Except for "kidney trouble" claiming the life of the patient's father, there is a negative family history for renal disorders, cancer, diabetes and tuberculosis. This woman has always enjoyed an adequate diet and her living conditions have been excellent. Coffee and tea have been imbibed conservatively, and tobacco and alcohol have not been used.

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*Presented before the Orleans Parish Medical Society and Southern Baptist Hospital Staff meeting, February 12, 1945.

†From the Department of Urology, Louisiana State University School of Medicine.

‡From the Departments of Gynecology and Obstetrics, Tulane University School of Medicine.

Examination revealed a well developed female, of the stated age, 4 feet, 11 inches in height, and weighing 98½ pounds. Temperature, pulse, and respiration were normal. The blood pressure was 140/70 in both arms. Generalized arteriosclerosis was moderate. Arci senili were present. The teeth were spurious. Examination of the chest showed a slight enlargement of the heart. There was slight evidence of emphysema. The mammae were atrophic. The liver was slightly palpable, but the spleen could not be palpated. There was no evidence of nephroptosis or renal enlargement. Slight suprapubic tenderness was demonstrable. The perineum was relaxed and lacerated. Moderate asymptomatic cystocele and rectocele were present. Senile vaginal changes had occurred. Inspection of the cervix uteri and palpation of the uterus and other pelvic contents disclosed no pathologic findings. Slight asymptomatic external hemorrhoids were visible. Rectal examination showed no pathology. The extremities were free of edema and freely movable. Reflexes were psysiologic. Microscopic study of catheterized specimen of urine showed innumerable erythrocytes and many leukocytes. Hospitalization for complete investigation was advised; consequently, the next night (May 20) the patient was admitted to the Southern Baptist Hospital. The urine proved to be acid and contained 1+ albumin with a specific gravity of 1.009. The hemogram was as follows: red blood cells 3,510,000, hemoglobin 67 per cent, white blood cells, 8,100, S.M. 35, L.M. 2, N. 62, and E. 1. The platelets were normal. Bleeding time was 1 minute. Coagulation time was 4 minutes 30 seconds. Blood chemical findings were: Total N.N. 33.3, urea N. 16.6, creatinine 1.5, uric acid 3.27, and sugar 75. Blood Wassermann, Kahn, and Kline tests were negative. Blood sedimentation rate was 23 mm. in 60 minutes, presenting a diagonal line. An x-ray film was reported as follows: "View of the chest shows the transverse diameter of chest to be 24 cm. and that of the heart 12.5 cm. Lungs show emphysema, but are otherwise clear."

On May 23, the urethra was dilated with sounds number 18, 20, 22, and 24 (Fr.) in order to introduce a Brown-Buerger cystoscope. There was marked injection of the blood vessels of the bladder compatible with generalized acute and subacute cystitis. A small diverticulum was found and its interior easily inspected. The urine was cloudy but not grossly bloody. There were no ulcers, stones, or new growths. The bladder capacity was good. The ureteral orifices revealed no pathology. A number 6 catheter was easily introduced into each renal pelvis. Urinary stasis was minimal on both sides. Specimen collected through the right catheter was bloody and that on the opposite side was hazy. Indigo carmine injected intravenously appeared in the right in 4 minutes and concentrated excellently in 6 minutes, while the figures for the left kidney were 6.5 minutes for appearance and fair concentration in 10 minutes. KUB roentgenogram with radiographic catheters in place showed five shadows in the region of the right kidney and two in the left renal region, compatible with bilateral nephrolithiasis (see fig. 1).

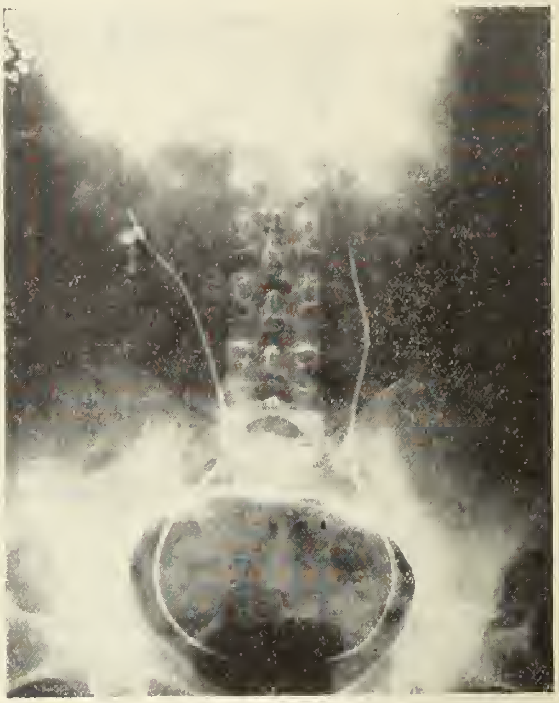

Fig. 1. KUB x-ray film with ureteral catheters in place revealed five calculi in the right renal pelvis. (May 23, 1944.)

Bilateral two-position pyelograms, using Skiodan as the solution for visualization, presented a picture of renal damage, worse on the left. Bacteriologic studies of the urine obtained at time of cystoscopy showed: Bladder—many pus cells, moderate number red blood cells, Gram negative bacilli, Gram negative cocci, and Gram positive cocci in chains; right kidney—many pus cells and red blood cells, Gram negative pleomorphic bacilli, and Gram negative cocci in chains; and left kidney—moderate number of pus cells and red blood cells, Gram negative and positive cocci, and Gram negative bacilli. Cultures proved the bacilli to be *Esch. coli.* Because of her renal status and age conservatism was advised; therefore, the patient was discharged on May 25, with a diagnosis of generalized hemorrhagic cystitis, small urinary vesical diverticulum, bilateral nephrolithiasis, chronic pyelonephritis, and generalized arteriosclerosis. Mandelamine tablets, three times a day, p.c., were prescribed in addition to Upjohn's ferrated liver concentrate with vitamin B complex, two capsules, three times a day, and Squibb's special formula vitamin capsules, one twice a day. High fluid intake was advised.

During the next month the patient was seen at the office for bladder irrigations and advice as to medication. After the course of mandelamine had been completed sulfadiazine was administered and subsequently discontinued because of nausea. Likewise sulfathiazole could not be tolerated; consequently, neo-prontosil was tried and proved satisfactory. The weight increased six pounds and the patient was "feeling O.K." until June 23, at which time severe pain occurred in the right renal region requiring the administration of dilaudid. Four days later the pain recurred to an excruciating degree. Again dilaudid was given intramuscularly and the patient returned to the Southern Baptist Hospital June 27, 1944. She was still afebrile and had had no chills. A skiagram revealed the presence of five stones in the middle third of the right ureter, all of which had been in the kidney pelvis at the time of first hospital admission (see fig. 2). Because of the location and number of stones, and the very poor condition of the left kidney, and in spite of the patient's age, surgical removal of the calculi was advised. However, the relatives were firm in their belief that operation would prove fatal and the patient insisted that she would "pass those stones if given a little help with a cystoscope." So, on June 29, ureteral bougies no. 4, 5, 6, 8, 10, and 11 were passed into

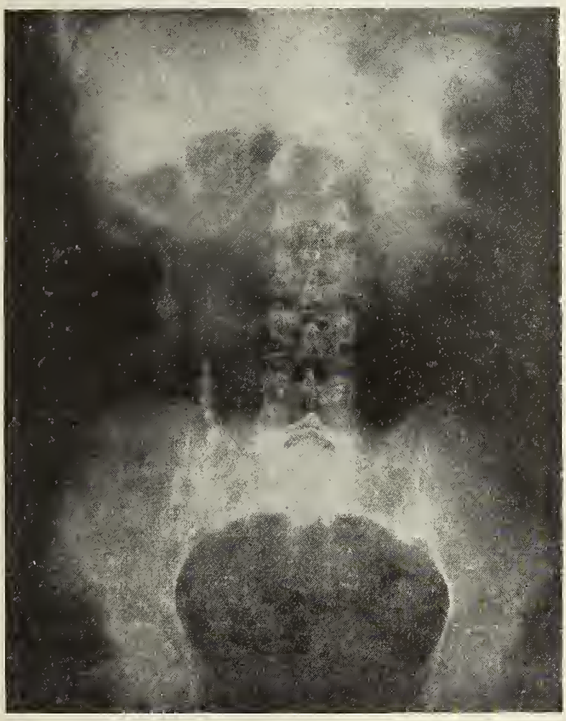

Fig. 2. Roentgenogram obtained June 28, 1944, showed five stones in the middle third of the right ureter.

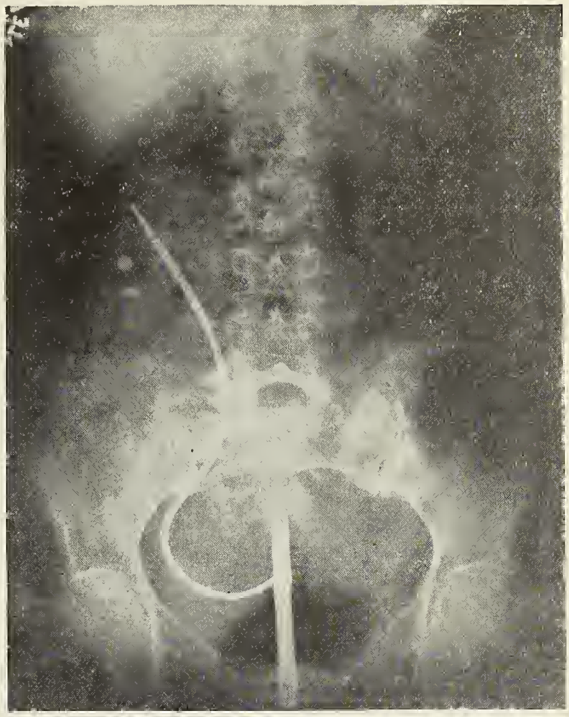

Fig. 3. KUB x-ray film with cystoscope and ureteral bougie in place disclosed displacement of the stones (June 29, 1944).

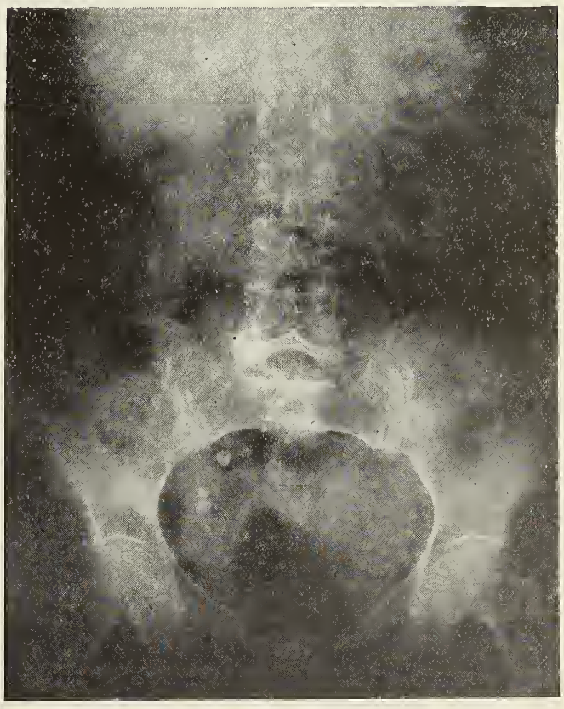

Fig. 4. Skiagram obtained July 3, 1944, proved downward progress of three calculi.

the right renal pelvis. Figure 3 shows the displacement of the stones with the largest bougie in place. Before the patient was removed from the cystoscopic room the bougie was withdrawn and a no. 5 and no. 6 catheter left indwelling. Incidentally, intravenously injected indigo carmine did not appear in 10 minutes. Forty-eight hours later the catheters were removed and two days thereafter her temperature reached 102°. Dilaudid hydrochloride gr. 1/32 was given by hypodermic injection as needed for pain, and fluids were forced. One octin mucate tablet, grains 2, was prescribed three times a day, beginning July 1. KUB x-ray film obtained July 3 proved that three stones had progressed downward, as shown by figure 4. Being free of fever and wishing to stay with relatives on July 4, the patient was permitted to leave the hospital. The vitamin, iron and liver, and neo-prontosil administration was continued. Furthermore, a tablet of octin was advised three times a day and one of dilaudid as needed for severe pain. On July 6 a daughter telephoned to state that pain was marked and the administration of octin was advised every four to six hours in addition to dilaudid as needed. On that night a stone was passed. The next day two more stones were passed. On July 13 the remaining two calculi on the right were passed (see fig. 5). An x-ray film (see fig. 6) proved the right kidney and ureter to be free from stones, all of which were of the calcium oxalate variety.

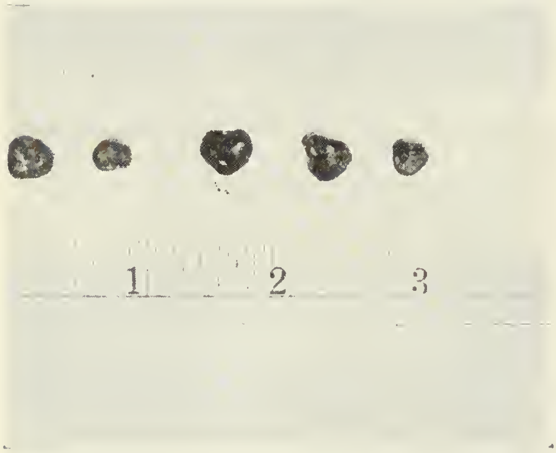

Fig. 5. Stone number 1 was passed via urethram on July 6, 1944; numbers 2 and 3 passed July 7, and the remaining two were passed on July 13.

Therafter the patient was seen several times. She improved remarkably and was "feeling fine" when she returned to Texas in September, 1944. A recent letter reports that complications have not been encountered.

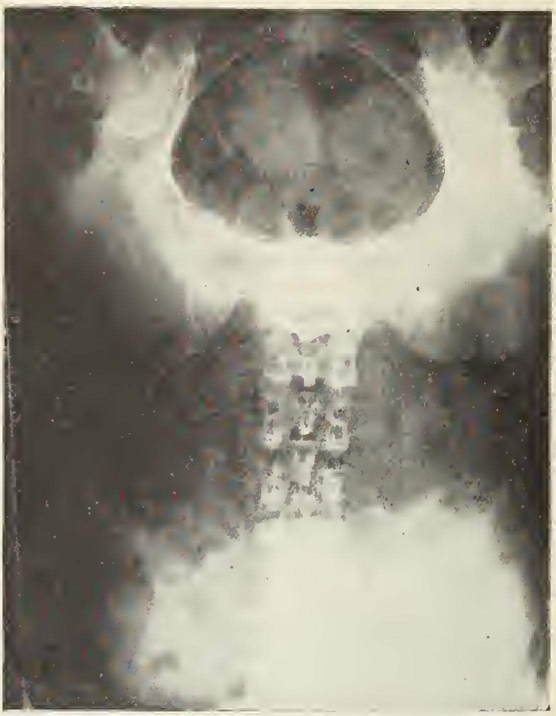

Fig. 6. Roentgenographic studies on July 15, 1944, proved the right ureter and kidney to be free from opaque calculi.

SUMMARY

The case of a 72 year old white female presenting five calculi in the right ureter was successfully managed without operation. Cystoscopic ureteral dilatation and the administration of an antispasmodic, octin, were employed.

Acknowledgment: Octin, *methyliso-octenylamine*, is an unsaturated aliphatic amine with antispasmodic properties. It was made available for use in this case through the courtesy of Mr. Drew Baker, of the Bilhuber-Knoll Corporation.

A CASE OF PERIRENAL ABSCESS*

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NEW ORLEANS

The following is the report of case of polycystic kidneys with a right sided perirenal abscess.

CASE REPORT

This patient, Mrs. L. R. P., aged 48, was admitted to Southern Baptist Hospital on December 20, 1944 and discharged January 1, 1945. She had been sick one week before admission to the hospital, complaining of pain in the right side, chills and fever. The patient had discovered a tender mass in the right lower quadrant. This mass extended upward towards the region of the right kidney. For the past six years she was known to have had hypertension and on admission the blood pressure was found to be 182 systolic and 100 diastolic.

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*Read before the Orleans Parish Medical Society, February 12, 1945.

She was a well nourished, strongly built woman and is the mother of five living healthy children. From time to time she has been treated for pyelitis, the most recent attack occurred about one month before admission to the hospital.

On admission her temperature was 101, pulse rate 112, respiration 24. The temperature reached 105° on the third day of her stay in the hospital. The day after admission she was cystoscoped by Dr. H. W. E. Walther and a pyelogram made. The urine from both kidneys was loaded with pus and bacteria and a culture showed *Escherichia coli.* The x-ray showed a filling defect of the lower pole of the right kidney, suggestive of a growth. This filling defect not only compressed the pelvis of the kidney but also compressed the lower calices. It was noted in the x-ray examination there was no scoliosis, although scoliosis is a fairly frequent finding in perirenal abscess.

On December 13, the right perirenal space was entered and a large quantity of foul pus was evacuated. It was noted that approximately 20 cysts projected from the cortex of the right kidney and these cysts ranged in size from 1 to 1½ cm. in diameter. Apparently one of the cysts at the lower pole had become infected, since one was found ruptured in the region communicating with the abscess and the perirenal abscess had resulted. All of the cysts which were visualized were punctured. A cigarette drain was placed at the lower pole of the kidney after 10 mg. of sulfanilamide had been put in the wound.

It was later necessary to reopen the wound and place another cigarette drain at the upper pole of the kidney; following this the patient made a stormy and slow recovery.

She was allowed to go home to the country on January 1. She developed intense pain in the left kidney; however, repeated lavage of both kidneys with the use of sulfonamides seem to have overcome the attack of pyelitis.

COMMENT

The unusual feature of this case is that the patient has had a number of children without any sign of failure of kidney function. Incidentally the P. S. P. for two hours was only 10 per cent. An older brother was operated on by me, 18 months before I saw this patient, for enormous polycystic kidneys. He has recovered sufficiently to return to his normal duties as driver of a school bus.

The ultimate prognosis in this case is poor.

A SIMPLE TREATMENT FOR SEBACEOUS CYST*

JOSEPH A. DANNA, M. D.†
NEW ORLEANS

Some years ago I had occasion to remove a sebaceous cyst 2 1/2 cm. in diameter from the face of a rather attractive woman. It was situated just above the lower border of the right mandible. I made a low incision partly so that the resulting scar would not show so much and partly to avoid the possibility of injuring the lower branches of the facial nerve. I was so careful in avoiding nerves that the cyst ruptured in removal and I must have left a small piece of the cyst wall behind, for it promptly recurred. What to do then, was the problem. I felt that the dissection difficulties and danger to nerve branches would be greater now than before. So I began to wonder if there was not something else I could do besides excision. Then, one day, I remembered having heard the late Dr. Walter E. Sistrunk describe a procedure for the excision of unsightly skin scars of wide extent by removing a narrow strip in the center, suturing the edges of the resulting wound and after thorough healing, repeating the procedure as many times as was necessary finally to remove the entire area. It seemed to me that if I could excise or destroy a small area of the top of the cyst, let it heal and repeat the process till the entire lesion had been destroyed, the cyst could thus be finally made to disappear without danger to surrounding nerve branches.

Meanwhile the new cyst continued to grow. It finally occurred to me that by using the diathermy current through a needle inserted in the center of the top of the cyst a slough could be produced which would heal by cicatrization, making the cyst wall smaller and that the process could be repeated till the entire wall had been destroyed. With the patient's consent I proceeded to carry out this idea. I used the office diathermy machine, inserted the needle in the top of the cyst and produced a slough about 1/2 cm. in diameter. In due course of time the slough separated, leaving the cavity open and draining, and in a few weeks the cyst seemed to shrink and melt away as it were and pretty soon the floor of the cyst wall could be seen to present nearly level with the skin surface. There was no further secretion and what finally resulted was a depression resembling a wide mouthed recently emptied blackhead. Cosmetically the result was very much better than I could possibly have hoped for, in fact, it was hardly noticeable even on close inspection. I wondered at this result for a long time before I decided deliberately to try it a second time, and the result was again so good that I have now used it on a total of twenty patients, nearly all within the past two years. The size of the cysts has ranged from 1 1/2 cm. to 6 cm. in diameter. Four were inflamed and bordering on rupture at the time of treatment. They were located as follows: On the face, four; scalp, one; collar line of neck, two; breast, two; above the breast, one; below the breast, one; between the breasts, one; on back, six; deltoid region, one; high thigh amputation stump, one. In all cases the contents finally were extruded and the cyst wall and cavity grew smaller and smaller till the bottom of the cyst wall presented at the opening and in all but two cases levelled off with the surrounding skin, leaving nothing but a slightly pigmented spot to show where the opening had been. There was no tendency to cicatrical closure of the opening, though there was an average of about 50 per cent final narrowing. This area now lined with cyst wall epithelium eventually takes on all the qualities of skin. In the first case, and in the one situated in the scalp, the final result was a narrow but not very deep depression in the skin that looked like a blackhead that had just been emptied of its contents (fig. 2 j).

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*Read before the Orleans Parish Medical Society, March 12, 1945.

†From the Department of Surgery, Medical School, Louisiana State University and the Surgical Service, Charity Hospital and Hotel Dieu, New Orleans.

TECHNIC

A sharp needle is inserted into the center of the top of the cyst so that its point barely protrudes into the cavity (fig. 1) and the current is turned on until a whitish eschar is seen to form around the needle. If the needle is inserted too deeply the force of the current is dissipated in the cyst contents and may give rise to steam formation if enough current is used to get desiccation or cauterization of skin and cyst wall. The diameter of the slough produced should be approximately one-fourth or one-third that of the cyst itself. One puncture is sufficient with cysts up to about 3 cm. in diameter. Two or three adjacent punctures will be required with the larger cysts. The center of the top of the cyst is the preferred point of puncture, for here the combined thickness of skin and cyst wall is thinnest,

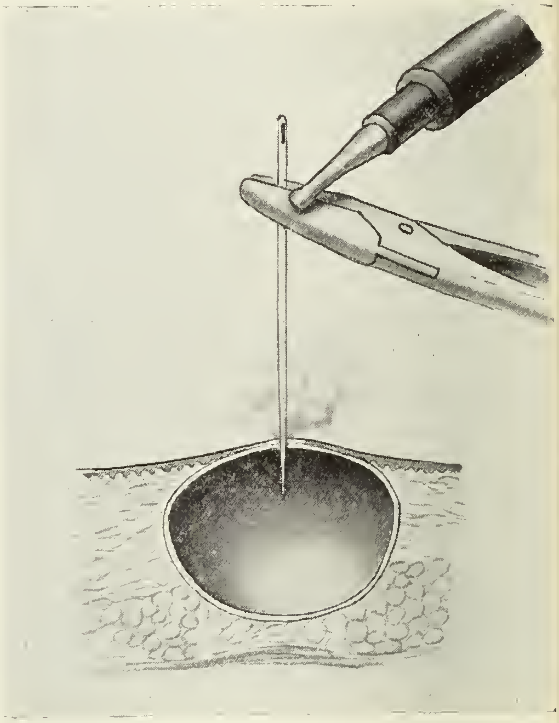

Fig. 1. Insertion of the needle and application of the electrode as the current is turned on.

there being no fat or areolar tissue intervening. A puncture away from the center would result in a much thicker slough (fig. 3a) with the possibility that cicatrical closure might ensue before skin and cyst wall epithelium had time completely to cover the entire edge of the resulting opening. Where the cyst has become infected and possibly ruptured into the surrounding fat, it may be difficult to judge just where the thinnest area over the cyst proper actually lies. In one case the needle was inserted into an adjacent pus cavity and the opening promptly closed, necessitating a second treatment with the needle properly placed. The unipolar desiccating current was used for the smaller lesions and the bipolar coagulating current for the larger ones. The current is barely strong enough to produce the necessary desiccation or necrosis, the patient experiencing a sharp stinging sensation that is easily borne. In only two nervous individuals was it neces-

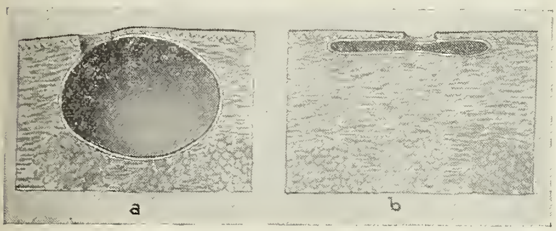

Fig. 3. (a) Increased thickness of resulting opening where needle has not been inserted in center of top of cyst; (b) persistence of cavity in case in which hard mass of inspissated cells had to be forcibly squeezed out before cavity diminished in size and finally closed.

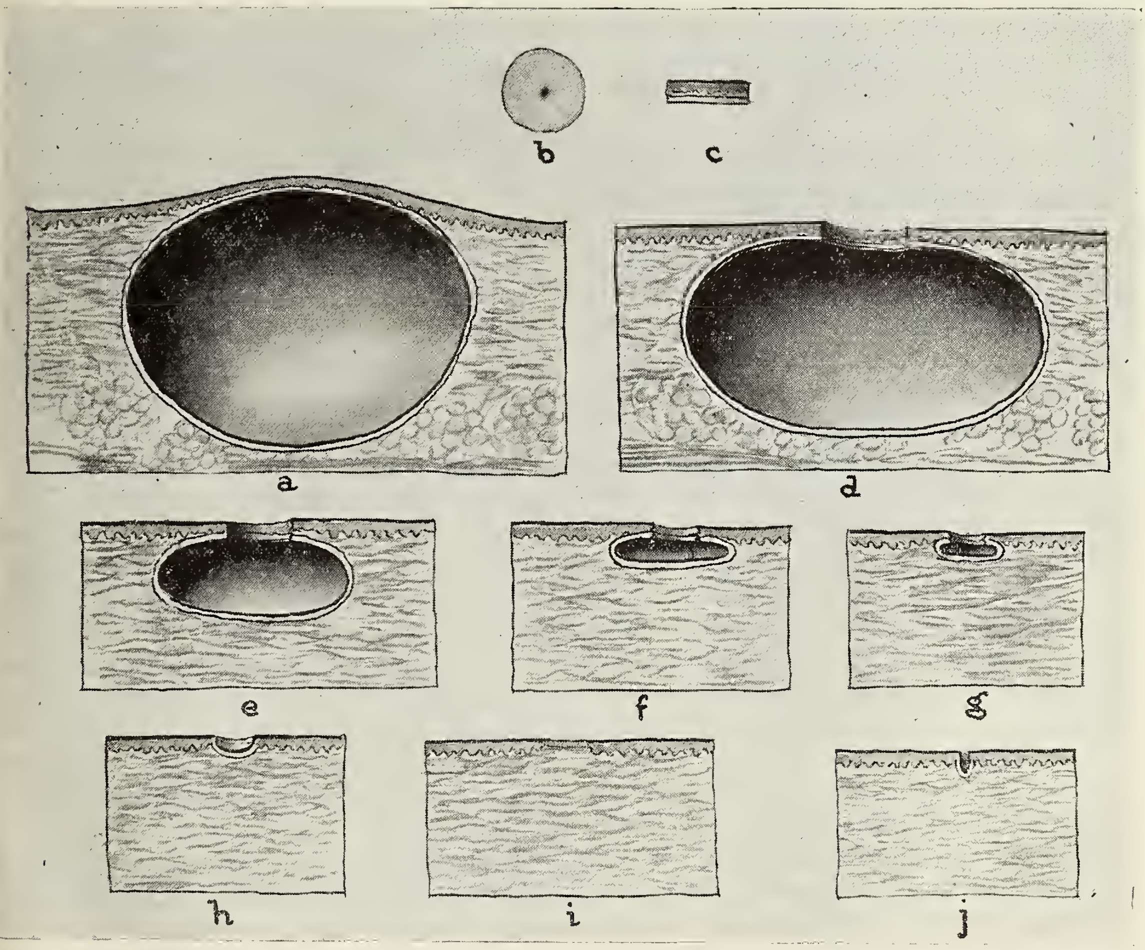

Fig. 2. (a) Section of intact cyst; (b) superficial view of button of tissue which sloughs out; (c) lateral view of b; (d) cyst after slough has separated; (e, f, g, h) various stages of diminution in size of cavity; (i) final levelling off of cyst wall, the result in 18 cases; (j) the result in two cases.

sary to use a 1 per cent procaine injection in the surrounding skin.

In the one in the deltoid region (fig. 2b) there was for some time no sign of diminution in size of the cavity. It was found that the contents consisted of a solid mass of inspissated epithelial cells which had to be squeezed out forcibly, following which the cavity promptly diminished in size and finally closed.

I had been taught that a sebaceous cyst must be removed whole and intact and that recurrence would ensue after any type of drainage, or if even the smallest portion of its wall remained behind. I have heard of failure to recur following infection so severe as to result in complete destruction of the cyst wall, but have never had this experience. Yet here, after one treatment, we leave the greater part of the cyst wall behind and the cyst disappears with a better cosmetic result than that following excision.

What is the mechanism of cure? A study of the illustration (fig. 1) shows that the combined thickness of the cyst wall and skin in the edges of the resulting opening after a disk of tissue sloughs away is not great. In fact, it is quite thin. During the five to eight days that it takes for it to slough away there is considerable inflammatory infiltration of the tissue surrounding the line of demarcation so that when the slough separates the surrounding tissue is rigid and has no tendency immediately to permit the opening to diminish in size.

There now ensues a race between the epithelium of the skin and that of the cyst wall to bridge the thin edge of the circular opening on the one hand, and the tendency of the opening to cicatrize in a circular manner and close on the other hand. Since the distance to be covered by the two advancing lines of epithelium is very short, the epithelium wins out, and once the entire circumference of the opening is covered with epithelium there is then no further tendency to cicatrical closure of the opening. Meanwhile, the contents of the cyst are free to drain out and actually do so. But what is most remarkable is the fact that the cyst cavity gets smaller and smaller till the bottom of the cavity finally presents on the surface and straightens out in a straight line (fig. 2 a, e, f, g, h, i). How this is brought about I find it hard to understand for some of these cavities were 6 cm. or more in diameter. Is it the tendency of the cavity to resume its original size as part of a sebaceous gland, or is it the massaging action of pressure on the surrounding fat and areolar tissue, or both? Perhaps with time and more experience these facts will finally be cleared. But in the meantime we are getting the results. I feel that the cautery effect of the treatment is essential to producing the desired result and that simple knife excision of a button of tissue would not be so successful. I have not tried simple excision. I am inclined to think that there is probably nothing really new about this treatment, and I can imagine Hippocrates poking a hot iron into the center of a large sebaceous cyst and getting a fine result.

SINUS DISEASE IN CHILDHOOD*

GEORGE J. TAQUINO, M. D.†
New Orleans

As a practitioner in the highly specialized field of otorhinolaryngology I usually feel a degree of hesitancy in addressing any audience outside of my specialty. But the war has changed many things, and so many general practitioners, who are the real heroes of the home medical fronts, are now doing the work of specialists as well as their own that perhaps you will not object to some suggestions to help you in your new duties. I speak with less hesitancy for a second reason. As you will soon find out, part of my purpose is to urge you to advise not more, but fewer, tonsillectomies, though I should make it clear that I am referring in my advice only to the kind of tonsillectomy described by a certain English physician as a routine prophylactic ritual, performed for no particular reason and achieving no particular result.

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*Read before the Iberville Parish Medical Society on February 24, 1945 by invitation.

†From the Department of Otolaryngology of the School of Medicine of Louisiana State University.

In 1918 Dean and Armstrong[1] read before the twenty-fifth annual meeting of the American Laryngological, Rhinological and Otological Society a communication which laid the groundwork of the modern concept of nasal and paranasal sinus disease in infants and young children. Much that is in it cannot be accepted today. The bacteriologic data need revision in the light of modern knowledge. The statement that 80 per cent of all cases of sinus disease in children can be cured by tonsillectomy has been thoroughly disproved. The frequency of a cause-and-effect relationship between sinus disease and arthritis would now be looked upon with a good deal of skepticism. Indeed, Dean[2, 3] himself retreated later from some of his original views. Yet he and his co-author, in spite of these criticisms, were the first to point out the frequency of sinus disease in young children and to emphasize that the reason it was not being diagnosed was because the possibility of its occurrence was not generally realized.

There is still no very general realization of the possibility. Piness and Miller[4], in discussing the allergic phase of sinus disease in children, wrote in 1939 that they found themselves obliged to say all over again the same things they had said in 1925 because there was still an almost universal lack of appreciation of the frequency and consequences of sinus disease in children.

The true incidence, it must be granted, is unknown. That it is as frequent as some enthusiasts claim, or as infrequent as some skeptics assert, is equally unlikely.

The only real scientific study is by Ebbs,[5] who found purulent infections of one or more sinuses in almost a third of 495 postmortem examinations on children under 14 years of age dying of a variety of medical and surgical conditions. Generally speaking, the incidence is greater in children in poor economic circumstances, though the disparity between them and children in more favored circumstances is less than might be imagined. Boys are more likely to be affected than girls, because they are more careless about protective clothing, habits of play, and antecedent upper respiratory infections. The incidence is greater in the winter months, especially in late winter when the resistance of children is likely to be at a low level and when the virulence of infecting organisms has been enhanced by human passage. The incidence in summer months has increased, however, due to a wider use of swimming pools, without proper precautions.

ANATOMY AND PHYSIOLOGY

One reason why sinus disease is not regarded as a more frequent possibility in young children is that the regional anatomy at that age is often forgotten and the nasal physiology is likewise overlooked.

Reduced to the simplest terms, the sinuses may be described as air cavities connected with the nasal cavity, and, like it, lined with ciliated columnar epithelium. It has been estimated that at least 10,000 liters of air pass through the nostrils every 24 hours, that at the lowest estimate 1,500 organisms are inhaled every hour, and that it must be a common event for 14,000 organisms to enter the nasal passages during an hour's tranquil respiration. The defense mechanism of the nose and paranasal sinuses, in addition to the phagocytic activity of certain blood cells, depends upon: (1) the coating of mucus in the nose, which serves as a protective blanket against these organisms, and (2) the ciliary activity of the mucosa, which serves as the motive power to keep the mucus moving toward the ostia of the sinuses and thence to the nasopharynx, carrying with it bacteria, cells and foreign particles. When either of these mechanisms is disturbed, sinus disease may be the end-result.

It is true that the sinuses, like certain other bodily structures, are underdeveloped in infants and young children, but it is not true that they are therefore incapable of becoming infected. The nasal sinuses, although they are little more than mucosal folds and recesses at birth, are usually well established by the third or fourth year.

The ethmoidal cells are present at birth, are well developed at two years of age, and can retain infectious material much earlier. The maxillary sinuses have been identified in a three months old fetus and are well developed at two years of age. Precocious development is by no means uncommon. Another fact of pathologic and diagnostic importance is that the sinus walls early in life consist of soft, cancellous bones.

Infection of the nasal sinuses during the period of development, if it is not corrected, definitely retards their normal growth and, in the case of the maxillary sinus, may interfere with dentition. Furthermore, infection of a single sinus may have a deleterious effect on another sinus. Shea[6] reported a series of cases in which development of the frontal sinuses was arrested because of infection in the antra and ethmoids; when the infection was corrected, normal growth was resumed.

ETIOLOGY

The etiology of sinus disease in children is both similar and dissimilar to its etiology at other periods of life. A large proportion of cases follow colds. Many cases follow exanthematous diseases. A thickened or deviated nasal septum, with or without a high palatine arch, is a frequent anatomic cause. Enlarged adenoids may act as a barrier both to the passage of air through the nose and to the passage of secretions from it, and, if they become infected, may themselves serve as a source of sinus infections. Basic causes include bad feeding habits; inadequate clothing; dry, overheated buildings; climatic conditions; unwise nasal medication; such constitutional factors as hypothyroidism; and poor hygiene in any respect. The theory that certain vitamin deficiencies predispose to changes in the epithelium of the sinuses and to subsequent infection has never been corroborated in human subjects, though vitamin imbalance probably contributes to a general lack of resistance.

Less familiar than these causes, and perhaps less readily acceptable because it is new, is the concept of sinus disease in childhood on an allergic background. Piness and Miller[4], in a remarkably good article on the subject, point out that allergy may be caused by a wide variety of agents and does not necessarily take the form of hay fever or allergy. Semenov[7], who made a histopathologic study of the mucosa in 500 cases of sinus disease, estimated the total probable incidence of allergic cases as 52.4 per cent. Dean,[3] who first implicated dietary habits in the etiology of sinus disease in children, later attributed it to a specific allergic diathesis. If one remembers that allergy is best defined as an individual hypersensitiveness, much of the confusion which attends all discussions of the subject would be promptly cleared away and the idea would cease to seem in any way unreasonable.

PATHOLOGIC CHANGES

The etiologic classification of sinus disease in children leads logically to its pathologic classification as: (1) purulent and allergic, or (2) as intumescent, catarrhal or purulent. The terms carry their own definitions.

The most prominent manifestation of any allergic condition is edema. In allergic sinus disease the pathologic chain of events consists of swelling of the turbinates; defective drainage; stasis; superimposed infections; finally ethmoiditis, possibly pansinusitis and, if repeated attacks occur, chronic sinus disease, often associated with persistent swelling of the turbinates, especially of the middle turbinates. The superimposed infection is frequently so dominant in late cases that the original allergic process is overshadowed.

In the non-allergic variety of sinus disease, as well as in the allergic variety in which secondary infection is present, the reaction in the tissues is sometimes more violent in children than in adults because it occurs in what may be called virgin territory. The epithelium in children is more fragile than in adults. The vessel walls are more delicate and therefore more permeable. The tunica propria is less fibrous and the structural cells less mature. As a result, the tissues are highly vulnerable to irritation and bacterial invasion, and the reaction is intense because of the facility with which transudates or exudates become established in such circumstances. As the mucosa becomes engorged and edematous, so that the opposing nasal structures are almost or actually in contact, the cilia become inactive and, as the infection progresses, the sinuses are unable to empty because of continued engorgement of the mucosa at the ostia. The histologic picture is chiefly edema of the epithelium and subepithelium. The process of extension and repair is the same as in any similar lesion, modified because of local anatomy.

Unless secondary infection is superimposed, bacteriologic studies are not useful in allergic sinusitis. In the pyogenic variety any of the usual types of organisms may be found alone or in combination. The retained secretion is a favorable culture medium for organisms of low pathogenicity.

The maxillary sinus is chiefly affected in infancy. Since there is no real ethmoid sinus during the first two or three years of life, ethmoid involvement at this period is for all practical purposes an osteomyelitis. Anatomic considerations explain the frequency of orbital complications of the latter type of infection in early childhood.

CLINICAL PICTURE

The most frequent symptoms and signs of sinus disease in children, as in adults, are nasal and postnasal discharges, rhinitis, coughs, hoarseness, headache, local discomfort, and otitis media. Mouth breathing may be either a cause or an effect. General symptoms include failure to gain weight, irritability, restlessness, listlessness, malaise, anorexia and vomiting; many symptoms in this group are probably toxic manifestations of absorption from the foci of infection. While nephritis, pyelitis, chorea, arthritis and rheumatic fever are sometimes due to sinus disease, there should be due caution in attributing them to possible focal infection until every other cause has been excluded and the cause-and-effect relationship has been indubitably proved.

Sinus disease of allergic origin may be manifested by chronic nasal irritation without sneezing; frequent rhinorrhea; persistent sore throat without tonsillitis; "stuffy" ears without pharyngitis; chronic cough without bronchial infection, wheezing or dyspnea; and recurrent bronchopneumonia without identification of pneumococci. In allergic sinusitis there is almost always a magnification of symptoms which arise from acute blockage of the sinuses. If secondary infection occurs, the clinical picture does not differ from that of non-allergic sinusitis.

Headache is a difficult symptom to evaluate in young children. Older children with sinus disease complain of it in various areas. It is undoubtedly just as frequent in infants and young children, who merely cannot complain of it. It is variously due to blockage of the sinuses with increase of pressure, to toxic irritation, and to actual inflammation of, or pressure upon, the regional nerve supply.

Loss of the senses of taste and smell occurs in children with sinus disease, just as in adults, and is far more important than is generally realized. The olfactory area is located in the narrowest part of the nasal cavity, and the olfactory function is therefore dulled by the least turgescence or edema of the superior and middle turbinates. An adult who loses his sense of smell and taste in the course of an illness can make himself eat, but a young child cannot. Therefore a child who cannot be roused to interest in his food can often be profitably studied from the standpoint of possible sinus disease.

COMPLICATIONS

Local complications of sinus disease are due to direct extension of the infection into adjacent areas through the peripheral bony plate of the sinuses. The ethmoid cells are the most common pathways. Their walls are extremely thin and may be absent, so that the periosteum is brought into direct contact with the dura or, laterally, with the orbit. Infection therefore readily spreads to the meninges or the orbital cavity. Evidently, however, these are not common anatomic anomalies, or complications would be more frequent. Osteomyelitis may give rise to the same spread of infection.

Whether bronchiestasis is a complication of sinus disease or merely occurs in accidental association with it is still to be determined. It is usually stated that the lymphatic drainage of the sinuses is to the cervical lymph nodes and thence to the thoracic nodes, but it has been shown experimentaly that it does not reach the lungs. Whether the association is causative or accidental, it is undoubtedly frequent and the treatment of bronchiectasis naturally involves the treatment of the sinus diseases.

DIAGNOSIS

Certain difficulties attend the diagnosis of sinus disease in children. The first is inherent in their age. Even the simplest examination may be difficult, and instrumentation, which is essential in all cases of sinusitis, may be very difficult indeed. If patience and tact do not achieve results, light anesthesia is necessary.

The second difficulty is that transillumination may seem negative when really it is not, because of lessened bone density at this age and the fact that lesions are fresh. As a result, the secretion is mucous instead of purulent, hypertrophies and polypi are infrequent, and changes which would show up in an examination of adults do not show up in children. In this same connection the warning should be issued that radiologic findings which are normal, (when interpreted in relation to the age of the child should not be mistaken for pathologic changes.

Finally, if the patient is not seen until the disease is advanced, a number of confusing situations may arise. Disease of allergic origin may be obscured by a superimposed infection. A sinus which represents the major involvement when the patient is examined may not be the point of origin. Indeed, remote complications may entirely overshadow the local causative condition.

The diagnostic procedure should follow the same lines as in the adult, that is, a complete history; a complete physical examination; anterior rhinoscopy; nasopharyngoscopy; transillumination; roentgenologic examination; and cytologic and bacteriologic studies as indicated. Topical or general anesthesia should be used as necessary if a complete examination is not otherwise possible.

Cases in which an allergic origin is suspected should be investigated by the standard routine, with such individual studies as the circumstances may indicate. The history in such cases frequently furnishes the clue to the etiology, as do certain special findings. Polypoid degeneration of the mucosa is an almost invariable mark of allergy, as is enlargement of the tonsils without evidence of infection. Re-growth of lymphoid tissue after tonsillectomy and recurrence of adenoids, according to Piness and Miller,[4] are both extremely important. These authors observed lymphoid hyperplasia of the tonsils in 80 per cent of 95 allergic children and recurrence of tonsillar tissue in 544 tonsillectomized children. The recurrence in some instances was observed within two months of operation, and in six cases was great enough to warrant a second tonsillectomy. They very correctly stress the importance of accurate diagnosis in such cases, to increase the probability of therapeutic relief, to decrease the probability of misdirected therapeutic effort, and to prevent secondary infection, which may be very difficult to control if the accompanying allergy is not recognized.

THERAPY

The discussion of the therapy of sinus disease in children can well begin with a statement of two things not to do. In the first place, the temptation to resort to tonsillectomy should be resisted until it is clear that the operation is called for because the tonsils are diseased, not merely enlarged; as an English writer said caustically, enlarged tonsils should be removed from the medical terminology, not from the pharynx. Piness and Miller[4] are also very emphatic on this point, stating that the extent to which tonsillectomy is recommended in allergic sinusitis is a measure either of the degree to which the allergic background is unrecognized, or, if it is recognized, the degree to which physicians are ridden by the tonsillectomy complex. The blame for the mistaken therapy they found was rather evenly distributed. In 84 cases they studied from this standpoint, they found that the operation had been advised by general practitioners in 22 per cent, by pediatricians in 32 per cent, and by otorhinolaryngologists in the remainder; evidently we are all to blame.

Griffiths[8] prefers to leave the tonsils *in situ* until after the sinuses are cleared of infection, because experimental evidence suggests to him that they function as filters for toxic substances originating in the sinuses. Mitchell[9] gives the same advice. Whether or not they are right, an examination to determine that the sinuses are free from infection may prevent some tonsillectomies and may forestall disappointing results if the operation is done.

The second prohibition in the treatment of sinuses is against the modern temptation to result to chemotherapy as a routine. The temptation should be resisted until it is clear that the case is one which would be benefited by this measure. Allergic sinusitis is not in this category. In fact, sinus disease is not a specific disease, as Fabricant[10] has pointed out, and success is not to be expected when it is treated as if it were. In his recent comprehensive study of the subject he emphasizes that alkaline preparations of sodium sulfathiazole solution injure the nasal mucosa, destroy the cilia and impair their function, deviate from the physiologic nasal pH, and disorganize the olfactory epithelium, quite aside from their possible toxic effects and the possible induction of a sulfa-resistant state, for which later the patient may have small reason to be grateful. If chemotherapy is the treatment of choice—the merits of penicillin in sinus disease are still to be tested—the choice of drug, mode of administration and dosage must be carefully related to the type of infection present and to the patient's age. It should also be remembered that sulfa drugs are bacteriostatic, not bacteriocidal, and that they do not take the place of drainage and of other indicated surgical procedures.

Sinus disease of allergic origin must be treated first of all from the standpoint of the allergy; even if secondary infection is superimposed, its correction will not be permanent unless the underlying allergy is corrected. Obstructing polyps, which are usually regarded as a manifestation of allergy, should be removed by an atraumatic technic.

In both the allergic and pyogenic varieties of sinusitis the basis of treatment is a hygienic rule of life, with respect to environment (which should not be too hot or too dry); adequate clothing; a balanced diet, without an excess of carbohydrates and with adequate vitamins, especially vitamin A; regular hours of sleep and rest; and correction of anemia, hypothyroidism and similar conditions. If upper respiratory infections develop, particular care must be used to prevent further aggravation of the sinus disease. A change of climate is usually impractical and is necessary only in the exceptional case.

Aside from these general measures, the principle of management should be to treat the patient as an individual, and to make local measures as simple as possible. Local applications of various sorts, irrigations, vaccine therapy (the results of which are most uneven), short wave diathermy, infra-red therapy and hot-air treatment may be used on the same indications and with the same precautions as in the adult. If these measures, after a reasonable trial, prove unsuccessful, drainage should be carried out, by the simplest possible method. Radical operation is required only in extreme cases. The Caldwell Luc operation is advocated by some authors, on the ground that the intranasal approach is unsurgical, but others believe that the risk of injury to unerupted teeth is too great if any other method will suffice. Exenteration is justified in sphenoid or ethmoid infections only if the sight is threatened and when all other causative factors have been eliminated. Suppurative complications require surgical treatment according to the usual indications.

Conservative measures are reported to be successful in from 80 to 98 per cent of all cases. On the basis of even the lower figure they should be given a fair trial before any other therapy is considered, including tonsillectomy.

SUMMARY

1. Two facts are generally overlooked in respect to sinus disease in children, namely, that it is very frequent, and that it is very frequently of allergic origin.

2. According to its origin, sinus disease in children is classified pathologically as purulent and allergic, or as intumescent, catarrhal, and purulent. The manifestations depend upon the origin and pathology.

3. Although diagnostic procedures are sometimes difficult, because of the age of the patients, sinus disease in childhood should be investigated by the same procedures as are employed in adults. Certain diagnostic pitfalls are emphasized.

4. Therapy should be as conservative as possible, with tonsillectomy carried out only when the indications for the operation are clearcut. Chemotherapy is useful only in selected cases and does not take the place of drainage.

5. Sinus disease of allergic origin must be treated first of all from the standpoint of the allergy.

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THE NORMAL AND ABNORMAL PHYSIOLOGIC EFFECTS OF TROPICAL CLIMATE*

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It is well to remember that many people who enter the tropics escape tropical diseases if they are at all careful, but no one can escape the climate. In fact, there is no doubt that thermal regulation is the major problem confronting man when in tropical climates. He immediately has difficulty in eliminating excess body heat efficiently due to the high humidity and high temperature of the environment. The higher the humidity and the closer the environmental temperature to body temperature, the greater this problem becomes. Obviously, when the rate of heat production is increased by exertion, the need for elimination of heat increases. As will be seen below, the influences of tropical environment on body heat are responsible for many physiologic and morphologic changes. Some of these are responsible for a sense of ill health and impairment of efficiency; a complaint of almost all inhabitants of temperate or cold climates who visit the tropics, as well as of many natives of the tropics. This sense of ill health and decreased efficiency is particularly marked when prolonged strenuous physical effort is maintained in the hot and humid climates—conditions under which heat production is great and the rate of elimination not great enough to maintain the normal level of body temperature.

BALANCE OF BODY TEMPERATURE

The average human body temperature is 98.6° F. In order to maintain this temperature, an equilibrium is established between heat production and heat elimination when the body temperature reaches 98.6° F. If the subject finds himself in a cold environment so that the loss of heat becomes greater than that of heat production, the body temperature tends to fall. In order to compensate for this tendency the rate of heat production may increase and mechanisms immediately come into play to reduce the rate of heat loss. Should a subject enter a tropical or subtropical environment, the efficiency of heat elimination is reduced and body temperature tends to rise. In order to maintain normal body temperature the rate of heat production is reduced and mechanisms develop which increase the rate of heat elimination. Some of the mechanisms involved, especially in tropical and subtropical environments, will be discussed very briefly:

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HEAT PRODUCTION

Heat is liberated in the process of metabolism of foodstuffs. All living cells liberate heat during the course of activities associated with the state of life. Certain cells are greater producers of heat than others, namely, muscular cells and glandular cells, particularly the liver. During periods of great muscular activity heat production may exceed elimination and the body temperature may reach 104° F. or more. In the digestion and assimilation of food, especially proteins because of their specific dynamic action, heat is liberated in large quantities. Again, everyone is well acqainted with the increased rate of heat production with shivering and chattering of the teeth upon entering a cold environment.

The rate of heat production under basal metabolic conditions varies especially with the size, age and sex of the subject. Detailed values are readily available in tables of metabolism. For example, at the ages of 25 to 29 years, males liberate 40.3 calories per square meter per hour and females 36.6. As mentioned previously, with increased cellular activity, as with exercise, these values are increased manifold.

HEAT LOSS

Heat is lost from the body through: (1) Radiation, convection and conduction; (2) evaporation of water from the surfaces of the skin, and respiratory tract; (3) raising of inspired cold air to body temperature; (4) excretion of CO_2 by the lungs, and (5) warm urine, feces and other excreta and secretions.

Most of the heat (about 90 per cent) is lost through vaporization of water, radiation, convection and conduction.

CONDUCTION

Heat lost by conduction depends upon the difference between the temperature of the surface of the body and that of the environment. The greater the difference the greater the rate of exchange. If the body temperature is higher than that of the environment heat will be lost from the body. The greater this difference the greater the loss. If the temperature of the environment is greater than that of the body, heat will be transferred from the environment to the body by conduction. The nature of the medium or environment in which the body is found will also influence the rate of heat transfer by conduction. Air is a poor conductor of heat while water is a good conductor. The latter is about 30 times a better conductor than the former; for example, a subject in a bath of cold water will lose heat by conduction thirty times more rapidly than in air at the same temperature. The denser the air or the greater its water content the greater its conductivity. Dry warm air therefore is not as good a conductor of heat as cold moist air. In the usual subtropical and tropical environments the temperature of the environment approaches that of the body so that very little body heat can be lost by conduction. In some desert temperatures heat is transferred from the environment to the body.

RADIATION

Heat is transferred by radiation from the hotter body to the colder one. If objects, such as furniture, walls, ceiling and the like in an environment are cooler than the surface of the human body, heat will be lost to those cool bodies by radiation. If the surrounding objects are warmer than the surface of the human body, heat will be transferred from them to the body of man. Everyone is acquainted with transfer of heat by radiation from a red hot stove to his body. Hardy has shown that the human skin, regardless of color, radiates like a black-body*. This is little influenced by the presence of water vapor and CO_2 in the layers of air next to the skin. A person will feel comfortable in a room with cold walls even though the temperature of the air is warmer than the body temperature, for more heat will radiate from the body to the walls than will be conducted from the warmer air to the body.

When bodies at different temperatures are near each other heat will be transferred from each to the other by radiation until they all reach the same temperature or a state of thermal equilibrium. The rate of transfer by radiation will be determined by the size of the bodies, their respective temperatures, the emissivity of the bodies, and the absorption, reflection and transmission qualities. These all important factors can be found discussed in detail in textbooks on physics. All human skins are fairly good conductors of heat and excellent radiators. The emission, infra-red transmission and reflection spectra of human skin are essentially that of a black-body radiator (Hardy).

In subtropical and tropical climates with the daily hot sun and the surrounding hot roads, streets, and buildings, it is difficult for a person to find a place in which he is not absorbing heat by radiation, at times in large quantities. This is especially true when on a dry, hot sandy desert.

CONVECTION

The transfer of heat to or from a fluid (liquid or gas) flowing over a surface of a hotter or colder body is by the process known as convection (Brown and Marco). Convection is termed free or natural when circulation is produced by differences in density produced by differences in temperature within the fluid, and forced convection when circulation is produced by mechanical means, such as a fan or pump.

The more rapid the flow of the fluid (usually air in the case of the human body) and the greater the quantity the more the rate of heat transfer. Furthermore, the greater the capacity and conductivity the fluid medium for heat the greater the transfer. For example, more heat can be transferred by flowing water than flowing air. In man, convection of heat by air is involved more often than by water. Flowing air that is warmer than the human body will transpose heat to the body, while cooler air will remove it.

In subtropical and tropical climates flowing warm air is not as effective in cooling man, since the air temperature is usually near that of the body. In hot desert air it may even transfer heat to the body. These effects are even greater when water is concerned. It is well to remember that evaporation is not considered in the above discussion of air currents.

EVAPORATION

The loss of body heat by the vaporization of water from the lungs and skin is important. This method of heat elimination becomes extremely important when heat production is rapid or the environment is such as to reduce heat loss by the methods described above. For each gram of water vaporized 0.58 calorie of heat is removed from the body. Perspiration is classified into two types:

a. *Insensible perspiration*: This includes all water lost from the body insensibly, that is, water that evaporates as soon as it reaches the surface of the body. This includes water that diffuses through the skin, water that is secreted by the sweat glands at a rate slow enough to vaporize before a visible quantity can accumulate, and water that vaporizes from the lungs.

b. *Sensible perspiration*: This includes visible sweating.

Insensible perspiration: The rate of insensible perspiration correlates very highly with the basal metabolic rate. It varies with the size of the subject, but averages about 28 grams per hour. The respiratory portion is about 40 per cent of the total, although the values found in the literature vary considerably. Obviously, the amount of water lost, insensible from the skin or lungs, increases with the environmental temperature and decreases with increases in the humidity. Dehydration tends to decrease insensible perspiration and hydration tends to increase it. Hot and dry air currents will increase insensible water loss from the skin. By definition, profuse sweating may be included (vide supra) as insensible perspiration when the rate of evaporation is such as to ensure a dry skin. For this reason it seems to be preferable to consider only water lost from the body by diffusion as insensible perspiration. A subject with ectodermal dysplasia without sweat glands may lose 400 calories in 24 hours by insensible perspiration which is by diffusion only of water through the skin.

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*A true black-body is one that emits the maximum radiation at a given temperature. The adjective "black" has nothing to do with the color of the body (Brown and Marco, Introduction to Heat Transfer, McGraw-Hill Book Co., Inc., N. Y. and London, 1942).

The heat eliminated by insensible perspiration varies considerably, ranging from 19 to 32 per cent of the total heat loss under basal conditions. The mean is about 25 per cent of the total body heat loss under basal comfortable environmental conditions. Heat lost by insensible perspiration does not vary greatly even under subtropical and tropical conditions and is of little importance when heat production is rapid, such as during strenuous exercise.

Sensible perspiration: Sensible perspiration is emergency sweating. It comes into action whenever heat production is very rapid and heat elimination by radiation, conduction, convection and insensible perspiration are inadequate to cope with heat production or when the environment is hot so that the temperature of the body is near or lower than that of the surrounding atmosphere. Under such circumstances sweating takes place. If the humidity of the atmosphere is low and especially if there are air currents, the sweat water is vaporized, cooling the surface of the body. If the humidity of the air is high, evaporation is impaired and the sweat rolls ineffectively from the surface of the body. Sweating may reach one liter or more per hour under hot environmental conditions during exercise. The evaporative powers of the atmosphere determine the effectiveness of such rates of sweating. In a dry windy desert atmosphere all of the sweat water may be vaporized as rapidly as it exudes from the sweat pores. Obviously rates of sweating as great at one liter per hour can easily upset water and electrolyte balance and often does so to such an extent to become a serious medical problem under certain circumstances of warfare and industry. Dill and his associates have shown that persons residing in a hot and humid environment may double their sweating ability after some time, a phenomenon of adaptation, training, or acclimatization.

A man can tolerate atmospheric temperatures of 240 to 260° F. if it is dry and sweat can evaporate freely. Such a temperature may grill a beefsteak (Best and Taylor), while man cannot tolerate a temperature of 120° F. if it is so humid that sweat only drips off the surface of his skin. With profuse sweating and strenuous exercise in a dry environment most of the body heat loss will be through the vaporization of sweat.

Sweat is the most dilute fluid secreted in the human body. Its specific gravity varies between 1.002 and 1.003. It may become concentrated, for as the water evaporates the solutes accumulate. Sweat is essentially an aqueous solution of sodium chloride although it contains urea, uric acid, some vitamins, various non-protein nitrogen substances and a very small amount of protein. Eccrine glands secrete little if any protein in the sweat, while the apocrine glands found mainly in the axillae and perianal regions of man, secrete sweat containing larger amounts of proteins. The horse secretes sweat rich in protein, particularly albumen. This is evidenced grossly by the foaming of his sweat where it is stirred in his hair by the harness, saddle or intertrigenous regions. A horse may develop hypoproteinemia from profuse and prolonged sweating. In man profuse sweating often results in hypochloremia. He may lose 0.5 to 1.0 gram in his sweat per hour with profuse sweating. Sweat is usually acid, the pH varying between 4.8 and 8.4 in a manner very similar to urine.

Claims have been made that there are racial differences in sweating. For example, it is claimed by some that in the negro the sweat smears over the skin more thoroughly thus making evaporation more effective and thereby aiding in the ability of the negro to cope with tropical climates. Such claims have not stood the tests of careful observations. In fact no definite differences that may explain racial peculiarities in acclimatization to tropical climates can be ascribed to sweating.

Sweat glands: Glands of the skin are composed of two types, *sudoriferous* and *sebaceous*. The former secrete sweat and are extremely important in body temperature regulation. The number of glands vary from area to area over the body, being entirely absent from the concave surface of the concha of the ear, labia minora, inferior surface of the labia majora, glans penis and the inner surface of the prepuce. The regional variations per square contimeter are: 400 glands on the flexor surfaces of the hands and feet, 200 on the forehead, 180 on the chest and arms and 90 on the legs and much less in number on the eyelids and convex surface of the concha. The sweat glands are of two types, eccrine which secrete clear sweat and apocrine which are limited to the areola, genital and circumanal regions.

Claims have been made that natives of the tropics and especially negroes have a greater abundance of sweat glands making them more capable to cope with hot and humid environments. This claim likewise has not been fully substantiated.

RAISING OF INSPIRED AIR TO BODY TEMPERATURE

The amount of heat lost by the process of heating of inspired air depends upon the temperature of the air inspired. The colder the air inspired the more will be the heat loss. The heat loss in subtropical and tropical environments by this means is not great. In fact, heat may be accumulated in hot desert temperatures during the day. Under resting conditions in a comfortable environment this amounts to 2 to 3 per cent of the total heat loss. With rapid respiration and low air temperatures this may be increased slightly. Air has a low capacity for heat and therefore is a poor medium for the transfer of heat.

6. *Loss of CO_2 from the lungs* accounts for only 3 per cent of the total heat loss.

7. One to 2 per cent is lost through the passage of warm *urine and feces*.

PHYSIOLOGIC MECHANISM CONCERNED WITH THERMAL REGULATION

A *thermal center* is located in the diencephalon or, more precisely, the hypothalamus. This center is concerned with the setting of the temperature level of the body. It is the main center through which the mechanisms of heat production and heat elimination are integrated so as to maintain a given body temperature, 98.6° F. in the average normal subject. There are thermal *spinal centers*. The nature of the function of these centers is unknown. Injury to the hypothalamus will resalt in fever. Severance of the nerve pathways to the cerebral and spinal centers results in disturbances in body temperature. These centers act through the mechanism of the vasomotor mechanisms, sweating, metabolism, and others. In infections, mainly through the thermal centers, the mechanisms are integrated in such a manner so as to produce fever. Antipyretic drugs likewise owe some of their effects through actions in these centers. It is beyond the scope of this presentation to enter into any detailed discussions of these mechanisms.

When a person enters a subtropical or tropical environment his body temperature tends to rise. In order to overcome a decided rise, physiologic mechanisms are set in motion in order to increase the rate of heat elimination by radiation, convection, conduction and evaporation. There is a peripheral vasodilation of the skin vessels increasing the quantity of blood reaching the surface of the body to liberate heat by convection, conduction and radiation. There results a redistribution of the blood so as to decrease the visceral volume and to increase the volume in the skin. The spleen, for example, constricts. The heart rate increases and the cardiac output per minute increases, thereby recirculating the blood rapidly and frequently through the interior of the body and through the muscles where the blood collects the heat liberated by metabolic processes and then to the surface of the body to discharge its heat load. Furthermore, if the individual has good judgment he will place his body in a cool draft of air to profit by the maximum benefits of the factor of convection. He will also avoid sources of heat such as engines, fires, and the like. Sweating begins if his skin and body temperatures continue to rise. This increases the rate of heat loss by evaporation. Should these mechanisms fail to keep the body temperature at the normal level then heat production must be reduced by the reduction of muscular exertion. Apparently after several months' sojourn in the tropics the basal metabolic rate decreases, a physiologic adjustment to reduce the rate of heat production.

During acute elevations in environmental temperature and humidity the changes described above are exaggerated. The respiratory rate and volume of tidal air are increased which increase the rate of heat elimination through the respiratory tract. This is not so great among people living in the tropics. When the mechanisms concerned with heat elimination fail, then heat exhaustion and heat stroke result. These syndromes are discussed below.

There are special apparatuses that have been developed to express quantitatively the influence of the environment on heat elimination. Among the many such instruments is the kathathermometer of Leonard Hill and the cooling ball of the Germans. These methods integrate heat loss by radiation, conduction, convection and evaporation under given environmental conditions. The usual dry bulb temperatures usually reported in the daily newspapers fail greatly in expressing the comfort of the weather for that day. Such inadequacies are fulfilled only in part by the above special instruments. These instruments do not take into consideration the factors of exercise, previous acclimatization, training, or other factors related to the so-called personal equation.

PHYSIOLOGIC EFFECTS OF TROPICAL CLIMATES

It is well known that a person in a hot and humid environment is not comfortable and satisfied. This discomfort probably is a result of physiologic compensatory mechanisms, such as cutaneous vasodilating, sweating, and tachycardia, integrated to maintain a normal body temperature. The mechanisms concerned with the peculiar feeling of discomfort are difficult to explain. Even though his body temperature is no different from that in a cool environment the mere fact that his physiologic heat eliminating mechanisms are active makes him uncomfortable. It was found that this feeling is markedly lessened if an arm or a portion of the body is cooled in water to facilitate the elimination of body heat. These sensations of discomfort are probably the result of many factors, chemical, physical and psychic. This is more pronounced when there are acute and marked environmental changes than when the changes are gradual and remain for a prolonged period such as are found in entering and remaining in the hot and humid tropics. Although the mechanisms involved are not well understood certain changes concerned in a large part with acclimatization occur in tropical climates. The mechanistic nature of the changes are little understood. Some of them are:

Growth: There are no detailed groups of studies on the influence of tropical climates on growth. The data available at present indicate that growth in general is impaired by tropical climates. The body tends to become linear, the weight decreases and the ratio of surface area to body volume increases. This facilitates cooling of the body. Natives of the tropics tend to be small. Evidence suggests a decrease in the reproductivity of man living in the tropics. Sexual maturity is reached earlier in the tropics than in the colder climates. Sterility among women is greater with a predisposition to menstrual dysfunctions and abortions. Laboratory studies with experimental animals grown under tropical environmental conditions support the above conclusions. It is, however, difficult to separate distrubances that arise from climatic conditions *per se* and those due to chronic infections, malnutrition and psychic maladjustments so common among natives and emigrants in the tropics. The growth of the hair as well as the skeleton is impaired. The rate and quantity of growth of hair is impaired by tropical climates. This is particularly true among fur bearing animals. This would be a necessary adjustment to facilitate cooling of the body.

There is an increase in the *pigmentation* of skin and the body in general in the tropics. The stimulus for this is derived in a large part from the ultra-violet light and heat from the sun present in great quantities at all times of the year. The pigment protects the underlying structures from injury by the sun's rays. The endocrine functions are disturbed by a tropical climate. As mentioned above, menstruation appears early and may be disturbed. In rats the thyroid gland has been shown to decrease in weight. The adrenals as well as all other organs decrease in weight at least proportionally with the decrease in body weight under tropical climatic conditions. Almost all reports on studies of the basal rate of metabolism indicate a relatively low rate both in natives and Europeans who remain in the tropics for several months. The mechanisms concerned with the metabolic change remain unknown.

The *nervous system* is particularly affected by the tropical environment. It is unknown as to how much of this is related to temperature and humidity *per se*. It is well known that most colonists and colonial workers assigned to tropical regions for long periods of time are frequently unhappy. It is unknown how much of this is due to the sudden change in things socially, to the ever present and annoying insects, the heat and humidity, the uneducated natives, the lack of stimulating influences of competition in business and society, homesickness for friends and relatives many miles away, and many other such factors. In the tropical regions of Australia where European emigrants have lived for generations "tropical neuroses, irritability or neurasthenia" are not nearly so common and pronounced. It is a well known physiologic fact that a steady stereotype stimulus fails to influence the animal after some time. One becomes so accustomed to an odor that he soon fails to be aware of its presence, or he becomes accustomed to a steady hum of a motor or the tick of a clock and is soon unaware of their presence. The same is true for the heat and humidity and lack of seasons of the tropics. In the temperate zones, changes in the seasons and sudden changes in weather are stimulating.

Tropical climates are free from very much weather and therefore are, at least, not stimulating and may even be depressing. As pointed out previously, when a person is in a hot and humid environment and must make the necessary physiologic adjustments, particularly sweating to assist in the dissipation of excessive heat, he is uncomfortable, unhappy and mentally ill at ease even though his body temperature is maintained at normal levels. This probably contributes to the mental as well as to the impairments in physical efficiency. It is unknown what part is due to central nervous system fatigue and fatigue in the autonomic nervous system especially concerned with the adjustments necessary for thermal regulation. Much has been written about such matters but little has been settled. Mental efficiency is impaired by the tropics although the causes are unknown.

There is a definite disturbance in *water balance* in the tropics because of the extreme importance and high development of the sweating mechanisms. As stated above, sweating is of utmost importance in thermal regulation in tropical climates. Without sweating fairly healthy life is impossible in these hot environments. A man may lose as much as one liter of sweat an hour. This results in a marked disturbance in water and electrolyte balance if the water and salts are not replaced. Much salt, mainly sodium chloride, is lost in the sweat and urine with marked sweating. If the water is not replaced the urine volume decreases and becomes highly concentrated. In the management of such people it must be remembered the daily water and salt intake and output must be equal if an equilibrium is to be maintained. Such an equilibrium is necessary for good health (vide infra). There is no definite evidence to support the idea that the blood is "thinner", that is, of lower specific gravity, among residents of the tropics. In fact some observers believe the converse is true, especially during very hot periods when sweating is marked. It is well to remember that the excretion of highly concentrated urine may result in variable degrees of kidney damage with the appearance of abnormal amounts of casts, erythrocytes, and albumin. Most physiologists agree that the formation of much weak (low specific gravity) urine will not injure the kidneys but the excretion of concentrated urine for prolonged periods will. The climate of the tropics predisposes to the latter unless man is attentive to his water requirements. Nephritis in general appears to be less prevalent and fulminating in the tropics. This may not be true since medical records and methods in the tropics are not as highly developed as in the cooler climates. The blood NPN and chloride have been found to be elevated in many normal people residing in the tropics. These changes are said to be due to a lack of sufficient water for urinary excretion. In the very warm and trying periods, the non-protein nitrogen was found to be elevated among people of the tropical parts of Australia but was normal at other periods or among Australians living in the cooler parts of the continent. The various components of the non-protein nitrogen fraction were proportionately increased.

The *acid-base balance* tends to be shifted to the alkaline state contrary to most expectations. The alkaline reserve is unchanged or increased. Acid-base studies, however, are still wanting. The blood sugar level tends to remain at lower levels than those of people living in cooler climates. The blood phosphorus levels likewise tend to be slightly lower than those of inhabitants of the temperate zones. The lipoid constituents of the blood are also quantitatively different among inhabitants of the tropics. Antagonistic levels for lecithin and cholesterol in the blood were found. High levels of lecithin were associated with low levels of cholesterol and vice versa. The cholesterol levels obtained in Queensland were normal or elevated during the very hot seasons. The influence of nutrition upon some of the results reported remain to be evaluated.

The *formed elements of the blood* are not influenced by tropical climates. The old idea that everyone in the tropics suffered from an anemia which contributed to his sallow complexion has been shown by careful and properly controlled studies to be erroneous. The erythrocyte and hemoglobin contents of the blood are no different from those of inhabitants of cool climates. The causes for the sallow skin in the presence of a normal erythrocyte count and normal hemoglobin level have been advanced but not proved. The sedimentation rate of the erythrocytes is increased by the tropics. Numerous time consuming studies of the white blood cells have been reported. Most reports indicate a decrease or a normal number. Some investigators have shown the subnormal counts to return to normal levels when the persons concerned returned to cooler climates. Many have studied the polymorphonuclear leukocytes as classified by the Arneth index, reporting a shift to the left. A study of these reports leaves the impression of a gross failure of the observers properly to control such factors as nutrition and low grade chronic infections, especially of the gums and gastrointestinal tract.

The *blood pressure,* systolic and diastolic, is little influenced by the tropics. Strenuous exercise produces a marked and rapid rise in blood pressure followed by a drop below the previous basal level.

The pulse rate remains about that for cool climates after acclimatization but tends to be high upon first entering the tropics. The blood volume tends to increase slightly in a hot and humid climate. There is a need for a more careful study of the body fluids.

Respiratory rate and volume apparently are little influenced by a tropical climate although the reports have varied considerably, some indicating a decrease and others an increase. *Gastrointestinal activity* is not materially different among natives of a tropical climate and those of a temperate climate.

The above physiologic discussions indicate that the physiologic state of natives of a tropical climate is not very different from that of persons in cool climates. Certain changes concerned with heat transfer are certainly definitely present, among which are a decrease in body weight and an increase in surface area of the body, increase in pigmentation, increase in sweating and the ability to sweat, and a decrease in the rate of metabolism and unnecessary exertion. Most of the studies from the tropics appear to fail to control such factors as malnutrition and low grade chronic infection related not necessarily to the tropics *per se* but to education, public health and economics. Furthermore, there is a great tendency among observers to fail to differentiate physiologic phenomena associated with acute elevations in environmental temperature and humidity from those in natives of the tropics or emigrants who have been in the tropics for several years. Such differentiations are necessary and should be considered very carefully before any sort of generalizations are made concerning the influence of a tropical climate on man.

CLINICAL STATES DUE TO TROPICAL CLIMATE

The hot and humid environment encountered in the tropics may produce three clinical states concerned with disturbances in the heat-regulating mechanisms or electrolyte balance or both. These are: heat cramps, heat exhaustion, and heat stroke.

Each syndrome is discussed separately except for the differential diagnosis and treatment. These latter two phases of the syndromes are presented jointly since there is so much in common.

HEAT CRAMPS

Heat cramps are associated with painful spasms of the voluntary muscles following muscular activity in a hot environment. There are many terms that have been applied to this process such as stoker's cramps, mill cramps, cane cutter's cramps, miner's cramps and fireman's cramps. Heat cramps are by far the most common of the three syndromes associated with a hot environment.

The *incidence* of heat cramps varies considerably with the occupation. Natives of the tropics have learned to reduce their muscular activity during the hot periods of the day. This decreases the amount of heat produced and thereby reduces the need for the elimination of extra heat. Nevertheless, under certain circumstances such as in mines, marching of soldiers, and in certain industries, heat production continues at a high rate in an environment in which the elimination of heat is impaired. In the British and American Army the number of soldiers suffering with heat cramps increases during marked activity of the men. Heat cramps are common in certain industries even in temperate climates.

The *mortality rate* is unknown in heat cramps. The disease may be fatal, but is essentially benign if the proper therapeutic measures as instituted promptly. Most fatalities are the result of some concomitant disease or complications resulting from neglect.

The *climate* is a significant factor in the production of heat cramps, but in the case of the tropics as well as temperate zones the immediate environment may be even more important. Environmental temperatures that reach or exceed the level of body temperature make it difficult to eliminate an excess of body heat. In fact, heat is transferred to the body from the environment by conduction, radiation and convection. Heat can be eliminated only by the evaporation of sweat. If the subject is exercising considerably, the load placed upon the vaporization of sweat is increased further. This is seen in firemen working in firerooms at temperature of 112°F. or men working in sugar refineries at temperatures between 112° and 135°F.

When the relative humidity is high the evaporation of sweat is impaired, thus reducing the efficiency of heat loss by sweating. Working under such conditions results in profuse sweating with marked loss in water and electrolytes.

Organic disease, alcoholism, poor hygiene, fatigue, malnutrition and generally poor health predispose to heat cramps. This should be remembered when people are to enter environments and circumstances in order to reduce the tendency to heat cramps. Repeated and recent attacks of heat cramps predispose to other and more severe episodes. Lack of acclimatization, likewise, predisposes to heat cramps.

The *pathology* associated with heat cramps has not been carefully studied because so few necropsies have been performed. Vascular congestion of the lungs and gastric mucosa has been described.

The *pathogenesis* of heat cramps is better understood today. The loss of sodium and chloride ions from the body fluids through the sweat glands and kidneys is the principal factor responsible for the production of the heat cramps. The blood and tissue fluids have about an equal reduction in these electrolytes. When critically low levels are reached cramps result. Persons who are sweating profusely over prolonged periods of time are losing water and salt in such a manner as not to reduce the concentration of the electrolytes. Drinking a considerable amount of water without the ingestion of salt reduces the concentration of the sodium and chloride ions thus precipitating heat cramps.

Disturbances in carbohydrate metabolism may be related to the production of heat cramps, but direct evidence to support any such relationship is wanting.

Incidentally typical heat cramps have not been produced experimentally in men or animals.

The *clinical picture* offers as a rule little diagnostic difficulties. After exposure to a hot environment while at work the victim begins to experience gradual involuntary spasmodic contraction of his skeletal muscles. The flexor muscles of the fingers are usually affected first. The cramp occurs every few minutes. Sometimes the larger muscles as those of the legs and arms and abdominal wall are affected instead of the smaller ones. When the abdominal muscles are involved the picture of an acute abdomen may be simulated. The muscles remain contracted for a variable period of time, usually not over three minutes. The contractions are associated with severe pain which may be almost unbearable at times. The contractions and pain varying a great deal in degree, develop slowly to reach a peak and then subside with relief of pain. Sudden movement, jarring and breezes may precipitate a spasm. The pain may be so severe that patients prefer death to another episode—still at times the contractions and pain are so mild that the subject continues to work with them without even seeking medical attention. As a rule there are no other pertinent manifestations. The pupils dilate with each episode of muscular spasm. The patient may be sweating and the skin is cold and clammy. The pulse may be slightly accelerated, but is usually normal. There may be headache, nausea and vomiting are rare.

On *examination* the affected muscles show fibrillary twitchings which make the underlying tissues appear to be alive with a mass of snakes. Palpation, firm or mild, of the muscles may precipitate violent contractions and severe pain. During the contractions the muscles characteristically become stony hard. These contracted muscles do not respond favorably to massage.

Except for the muscle findings, the remainder of the examination is essentially irrelevant. The temperature is normal or only slightly elevated. The respiratory and pulse rates may be slightly increased. When the abdominal muscles are involved the picture may resemble an acute abdominal syndrome such as acute peritonitis, appendicitis, and the like. Between the periods of muscular spasm this picture disappears. The Chvostek and Trousseau signs are characteristically absent. The neurologic examination is normal. Any mental disturbances are the result of the pain.

The cramps may be ushered in by mild vertigo, headache and feeble muscle twitching. They usually follow one or more hours in a hot environment in a susceptible person and several days in others. At times the cramps appear several hours after leaving work. The mechanisms for the pains are unknown but are probably the result of local effects within the muscles of dsiturbances in electrolyte balance. The pain appears to originate peripherally in the muscles and not in the nervous system. Cramps are known to have included almost all voluntary muscles. Spasm of the heart occurs rarely if at all. Flexion, pressure, knocks, cold air or water and almost any form of direct stimulation of the muscles may illicit a spasm of the muscles in severe cases. Profuse sweating precedes these attacks and may continue paroxysmally during the periods of actual pain and muscular spasm.

The *laboratory examinations* usually show evidences of dehydration and sodium chloride loss. The blood proteins are elevated, the serum proteins may reach 12.7 grams per cent, resulting mainly because of an elevation in the globulin fraction. In fact the albumin fraction may be depressed. The elevations are due in part to anhydremia. With improvement and hydration the levels return to normal. The hemoglobin and erythrocyte concentrations increase with the dehydration to levels comparable to those of the blood proteins. The erythrocyte count may reach 6,500,000. Total blood volume is probably decreased slightly with dehydration. but adequate studies are wanting.

The acid-balance is changed somewhat. All ions are changed consistently except the bicarbonate ion. The latter may be increased, decreased or normal. It may drop to below 22 m. eq. The pH varies considerably, from 7.08 to 7.48. It is usually below 7.40. The acidosis is most probably due to a depletion of base rather than an accumulation of organic acids. There is an increase in inorganic phosphate. The cause is unknown, but the increase may be 1 to 3 m. eq. It is not dependent on oliguria. Lactic acid is little changed from the normal.

The changes in sodium and chloride are consistent and significant and have been stressed in mechanistic explanations of heat cramps. The blood levels are lowered. The chloride levels may read 54 m. eq. (normal 99 to 108 m. eq. or 550 to 600 mq. per 100 c.c.) and are usually below 100 m. eq. The sodium level may read 121 m. eq. (normal 153 m. eq. or 335 mg.) and usually is below 140 m. eq. It is the only inorganic base that is lowered in heat cramps. The potassium levels may be increased 1 to 3 m. eq. These changes result in an alteration of sodium and potassium ratio, a possible contributing factor concerned with the muscle spasms. The calcium level of the blood is not decreased but may be increased. A maximum concentration of 14.3 m. eq. or 14.3 mg. per 100 c. c. has been reported. A part of this change may be explained by the change in blood proteins. The serum magnesium is not changed. The blood sugar is not changed.

The non-protein nitrogen content of the serum is usually elevated 10 to 25 mg. per 100 c. c., levels of 108 mg. being reached at times. A urea nitrogen level of 120 mg. has been reported.

The white blood cell count is usually increased 4,000 to 6,000. A value of 18,000 has been reported. This like the change is non-protein nitrogen is a rather constant finding in heat cramps.

In summary, the changes in the blood acid-base balance are quite large. The increase in serum protein and cell volume are of the sort seen with severe dehydration. The degree of serum sodium, potassium and phosphate changes are comparable only to that of adrenal deficiency. The rise in blood calcium is comparable only to that encountered in hyperparathyroidism.

The urine is reduced slightly in quantity 400-800 c. c. per day, but there is no marked oliguria. The pH of the urine is usually about 5.0. The concentration of chloride is below 40 m. eq. per liter, although occasionally it is greater than this. With therapy and the administration of water and salt there is a relative absence of sodium and chloride in the urine. During such a period 40 or more grams of sodium chloride may be retained in a three day period. The potassium excretion in the urine is also decreased. An increased urinary excretion of phosphate and creatine suggests increased phospho-creatine breakdown in this disease. The total nitrogen excretion may be increased. Albumin may be found in abnormal amounts in the urine.

HEAT EXHAUSTION

Heat exhaustion or heat collapse is characterized by profuse sweating, weakness, vertigo, syncope, pallor, low blood pressure, thready rapid pulse, a subnormal, normal or slightly elevated temperature and the general picture of peripheral circulatory collapse or shock. This is not a serious syndrome as a rule, the mortality rate being low.

The *incidence* of heat exhaustion varies considerably with many factors. It is more common during very hot weather lasting long periods of time. In the tropics and especially tropical desert areas particularly when muscular activity is strenuous for long periods in the hot sun, such as soldiers on the field of battle or maneuvers, heat exhaustion is common. In some of the subtropical regions of the United States, Iraq or Iran the incidence is high during the summer. Poor acclimatization, poor health, restriction of water and salt intake increase the incidence. Colonists from the cooler areas of the earth suffer from heat exhaustion if they enter the tropics without taking the necessary precautions in rest, clothing, and avoidance of too much food. In Army establishments located in subtropical and tropical areas heat exhaustion is the main cause for hospitalization of soldiers. It is a common but not serious syndrome produced by hot environments. This is a common problem in industrial medicine where men work near hot furnaces and boilers.

The *mortality rate* in heat exhaustion is low or negligible. Usually the person who remains in the unfavorable environment and fails to heed his symptoms as a warning to seek relief passes into the state of heat stroke and death. Occasionally some patients die of shock. Senility and debilitating diseases predispose to death.

The *climate* is of great importance. The influence of climate on heat exhaustion is essentially the same as indicated for heat cramps. A person working in an atmosphere which is hot and humid strains his thermal regulating mechanisms, resulting especially in profuse sweating with a loss of sodium chloride and water. Working in mines, blast furnaces, boiler rooms and the like predisposes to heat exhaustion. In the tropics an individual not only has difficulty eliminating heat during his working hours but continues with this difficulty throughout the entire day. This leads to final exhaustion and the clinical syndrome described below.

The *pathology* of heat exhaustion is inadequately known since so few people die of this condition alone. Uusually heat exhaustion passes into heat stroke before death. The pathologic findings are not specific and are similar to those described for shock. There may be vascular congestion in viscera with petechial hemorrhages and signs of early degeneration of the parenchymal cells of the viscera.

The *pathogenesis* of heat exhaustion is little known. Like heat cramps, prolonged physical exertion in a hot environment is responsible for the syndrome. A hot climate such as a tropical climate, particularly a desert one, results in heat exhaustion if muscular exertion is even moderate in amount. An inadequate intake of water and sodium chloride seems to be of great importance in the development of this syndrome as in heat cramps. Heat cramps is frequently associated with heat exhaustion. Senility, alcoholism, poor health and debilitating states predispose to heat exhaustion. Unlike heat stroke (vide infra) and like heat cramps there is no collapse of the thermal regulating mechanism. In heat exhaustion the circulation fails, circulatory collapse, after its unsuccessful attempt to provide compensatory physiologic processes to ensure a rate of heat loss equal to heat gain.

The *clinical picture* of heat exhaustion is not difficult to identify. There are prodromal symptoms which appear in persons working in tropical environments that suggest impending heat exhaustion. These people complain early, one to two days before the onset, of weakness, malaise, profuse perspiration, nervousness, lassitude, giddiness, insomnia, light headedness, vertigo, headache and restlessness. These symptoms increase in severity and in addition there are syncope, nausea, vomiting, cramps, dyspnea, temporary blindness and exhaustion and collapse. The patient may present a shock picture of pale, cool and clammy skin, a rapid thready pulse, and a drop in body temperature below the normal. It is well to remember that the body temperature may be below, at or above the normal level. Should the patient fail to leave the hot environment, stop muscular exertion and enter a cool environment, he may become unconscious and die, or develop the highly fatal state of heat stroke.

The *laboratory studies* show essentially the same findings described above for heat cramps, especially, of course, if heat cramps are well developed with the heat exhaustion. If there is dehydration with hemiconcentration, the hematocrit is elevated and the erythrocyte count is increased. The urea nitrogen levels of the blood may be increased slightly. As a rule the blood chloride level is normal. The urine is normal or may be reduced in quantity and concentrated. As a rule it is normal. At times there may be traces of albumin and abnormal amounts of casts and erythrocytes. When heat stroke is present the laboratory finding of heat stroke will be present (vide infra). In severe cases there is a tendency to acidosis with a definite reduction of the alkaline reserve, evidenced by a reduction in the carbon dioxide combining power.

HEAT STROKE

Heat stroke (sun stroke, heat collapse, thermal fever, heat hyperpyrexia) is a highly fatal syndrome due to a hot environment. It is characterized by extremely high fever and profound coma. It may be preceded by symptoms of heat exhaustion.

The *incidence* varies considerably. It occurs principally in elderly people (60 years or older) and persons suffering with debilitating chronic illnesses. It occurs in environments in which the temperature is high and especially in subjects who are active. Under these conditions they are unable to eliminate sufficiently their excess heat by conduction, radiation, convection and evaporation. This is seen in the mines of the tropics, workers in the hot sun on a humid day without rapid currents of air, or firemen in ships or factories. In the temperate zones many people suffer from heat stroke during severe and prolonged heat waves. There may be periods without any reported cases of heat stroke and others in which the incidence is relatively high. In the temperate zones those who are accustomed to the cool weather as of Boston or Cincinnati are particularly prone to develop heat stroke during heat waves.

The *mortality* rate is very high, varying from 10 to 80 per cent. It is the most serious of the three heat syndromes. The mortality rate is much greater in senile and in chronically diseased subjects than in the younger ones. The earlier and more complete the therapy the better the prognosis.

The *climate*, as in the above two syndromes, is of paramount importance in the production of heat stroke. The rôle of climate in heat stroke is essentially as presented for heat cramps.

It is generally agreed that sunstroke and heat stroke are the same syndromes resulting from disturbances in heat transfer. There is no evidence that sunstroke results from any other factor than that of the radiant heat from the sun, the excessive heat from the sun and environment in general being the source rather than a boiler of a ship, for example. Heat stroke is apt to occur whenever there is a sudden and prolonged elevation in the environmental temperature, and, of course, especially when the individual is exerting himself.

The *pathology* in heat stroke is not well understood. There is marked and early rigor mortis with congestion of the vessels of the viscerae. There may be petechial hemorrhages in the skin and mucous membranes. The parenchymal cells of many organs may show early signs of degeneration such as cloudy swelling. The blood may be very dark. These patients die so quickly that there is insufficient time for marked degenerative changes to take place.

The *pathogenesis* of heat stroke is little known. Senility and chronic debilitating diseases such as hypertension, arteriosclerosis and diabetes mellitus predispose to the development of the syndrome. When the temperature of the environment exceeds body temperature heat loss by radiation, conduction and convection ceases, and instead heat is absorbed from the atmosphere by these mechanisms. Heat is also being produced by the processes of metabolism. The body heat can only be lost by the evaporation of sweat. Should this loss be insufficient then the body temperature rises to extreme levels. In some reports all patients who have developed heat stroke cease to sweat completely at about the time the syndrome develops. Apparently, the thermal regulating mechanism fails suddenly, resulting in body temperatures of 106° to 107° F. or more associated with the symptoms described below. The reasons for the sudden failure of thermal regulation and the coma are unknown.

It is known that persons who are too warmly clothed and whose clothing fits tightly are prone to develop heat stroke. Such clothing interferes with the loss of body heat.

Disturbances in water and salt metabolism with a resulting dehydration and sodium chloride deficiency may be factors that contribute to the development of the syndrome but they appear to be of minor significance.

The *clinical picture* is characteristic. The prodromal symptoms consist of weakness, vertigo, nausea, syncope, headache, feeling of excessive warmth, mild heat stroke, abdominal pain typical of heat cramps and the symptoms and signs described previously of mild heat exhaustion. Most, and in some series all, patients noted a cessation of sweating shortly before the onset of the heat stroke. All patients had been sweating profusely before the sweating suddenly ceased.

The acute phase of the disease is characterized by a body temperature which is markedly elevated, a dry skin and coma. The body temperature may be less than 106° F., but is usually above that level and may reach 112° F. The patients are usually stuporous or unconscious. There is no sweating, the skin is dry, flushed and hot. There may be a maculopapular eruption over the trunk of the body. The skin may be fiery red and at times marked depression of the nervous system evidenced by flaccid muscles, diminished tendon reflexes and incontinence of feces. The respiration is rapid and deep and stertorous but not labored. Those not in coma show evidence of mental confusion.

Congestive heart failure is not present. There may be coarse rales in the lungs and at times fine moist rales. Pulmonary edema may develop. A rapid feeble pulse, diminution in blood pressure and other signs of shock may be present. As a rule the pulse is full, the pulse pressure high and the systolic blood pressure elevated. Blood flow is not retarded but may be accelerated. Venous pressure is normal.

At times the patients are delirious and may have convulsions or muscular twitchings. The pupils are usually contracted.

The *laboratory studies*: The blood picture is essentially normal. As a rule there is little if any dehydration and therefore the blood changes associated with dehydration are not present. The urine is concentrated, acid and contains albumin, casts and erythrocytes. The chloride excretion in the urine is reduced.

The blood proteins, hemoglobin, cell volume, erythrocyte count and hematocrit are normal or may be increased proportionately to a mild hemoconcentration sometimes present. The albumin and globulin ratio is not disturbed. The serum sodium and chloride are not usually changed. The chloride level is usually 98 to 100 m. eq. per liter (557 to 635 per cent sodium chloride). The sodium levels parallel the chloride. These values indicate that electrolyte changes in heat strokes are only coincidental if present.

The acid-base balance is changed to the acid side, the carbon dioxide content being definitely lowered. The high temperature, muscular activity with oxygen debt and lactic acid accumulation probably account in a large part for these changes.

GENERAL EFFECTS OF A TROPICAL ENVIRONMENT

The most common influence of a tropical climate is not to produce the definitely clear-cut syndromes described above. It is the mild influences which are of greatest importance to everyone, including the clinician. Invariably people who find themselves in a hot and especially humid environment for a prolonged period of time experience symptoms. These symptoms may be mild but are definite and are especially apt to be recognized upon entering a cool and comfortable environment. The symptoms consist of easy fatigue, inability to concentrate well, mental and physical inefficiency, decrease in appetite, insomnia, restlessness and irritability, sweating, and a general decrease in energy and interest in work. This is especially marked in colonists who enter the tropics from the temperate zones. The natives of the tropics seem to cope well with tropical climates. This general feeling of ill health and decreased efficiency is an important problem in public health and preventive medicine, as important, if not more important, as any concerned with communicable tropical diseases. The development of the tropics as a good place to live will be determined by the success with which the problem of heat transfer in the tropics is handled.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis of heat cramps, heat exhaustion and heat stroke is best considered collectively, since they are so closely related mechanistically or certainly in their origin. They are all expressions of difficulties in the elimination of body heat. The identification of any of the three syndromes is not difficult if the patient is seen while experiencing his symptoms. All three entities are usually encountered in persons working hard in a hot environment. They are especially prone to development if the climate is tropical. In people working under such conditions, those who have the symptoms described above should be considered to suffer with a heat syndrome.

In heat cramps the severe pain and other symptoms make the diagnosis. At times the severe abdominal cramps may simulate an acute surgical abdominal disease. There is little confusion as a rule, for the history and examination and the response to salt and water therapy are diagnostic. In heat exhaustion there is the picture of circulatory collapse or shock and possibly the picture of heat cramps. At times the picture of heat stroke may develop. In heat exhaustion the body temperature is usually below normal, but it may be normal or elevated. Heat stroke is characterized by hyperpyrexia, dry hot skin and a state of marked mental confusion or coma.

Among the clinical states that may be confused in differential diagnosis are nocturnal cramps, cramps following violent exercise, gastric crises of tabes dorsalis, epilepsy, tetany, trichinosis, uremia, hysteria, malaria (especially cerebral malaria), and many other states. With a careful clinical work-up these states should not lead to confusion. Table 1 summarizes the significant differentiating characteristics of heat cramps, heat exhaustion and heat stroke.

TREATMENT

The *general treatment* is similar for the three syndromes and is therefore discussed as such first and then specific differences are indicated.

Prevention of the syndromes is more important in the management of the heat syndromes than the treatment of the syndromes *per se*. This aspect of the management is given serious consideration by the armies of the world and most industrial concerns. In the tropics measures to prevent the heat syndromes are not sufficiently emphasized. The old empirical and traditional methods employed by the natives of the tropics are essentially the basic principles still in use today.

The measures advocated to prevent heat

TABLE I.

DIFFERENTIATING CHARACTERISTICS OF HEAT CRAMPS, HEAT EXHAUSTION AND HEAT STROKE.

	Heat Cramps	Heat Exhaustion	Heat Stroke
Body temperature	Normal	Below normal usually, may be normal or elevated	Hyperpyrexia
Mechanism	NaCl lack	Circulatory collapse	Failure of the thermoregulating mechanism
Main symptom complex	Severe muscle cramps	Shock-like state	High fever, stupor, coma
Prognosis	Excellent	Good	Very poor — high mortality rate (10-80%)
Main therapeutic measures	Cool environment, rest, NaCl and water, morphine for pain	Cool environment, NaCl and water, rest	Ice tubbing, or wet sheets and fanning, rest
Incidence	Fairly common	Common	Relatively uncommon
Age	Any age, usually younger group	Any age, more common in senile subjects	Usually senile and debilitated individuals

cramps, heat exhaustion and heat stroke are the same for the three syndromes. This is to be expected since the mechanisms involved in each are similar. The state of health should be at best at all times, especially when one is exposed to a very hot environment. Frequent examinations with care of the teeth, avoidance of the use of alcoholic drinks even in relatively small amounts, and maintenance of a well-balanced diet should be advocated. The diet should not be excessive in calories and proteins and should contain the necessary vitamins. There should be a high sodium chloride intake, at least 15 grams a day. The fluid intake should be liberal, that is, sufficient to insure a urine volume of 1500 c. c. a day. The carbohydrate content of the diet should be great enough to supply most of the energy requirements.

Many measures have been advocated to insure sufficient *sodium chloride* intake to avoid disorders from the heat under exceptionally hot and environmental conditions in which strenuous exercise is necessary. For example, the U. S. Army advises the use of drinking water for its troops stationed in the tropics that contains sufficient sodium chloride to make a 0.1 per cent solution. To do this, one pound of sodium chloride is added to each 100 gallons of water, or 0.3 pounds to each 36 gallons Lyster bagful of water, or one-fourth teaspoonful to each quart (metal canteen) of water, or two 10 grain (0.6 gram) tablets of sodium chloride to each quart of water consumed, or one 10 grain (0.6 gram) tablet to each alternate glassful of water consumed.

Cool water should be drunk freely. If the urine volume of normal people is kept at 1500 c. c. a day one can be certain that the fluid intake is sufficient to meet the water lost in sweating, stools, respiration as well as other needs. In the climate of a tropical desert this often means drinking many quarts of water daily. Cool non-alcoholic drinks, such as fruit juices, are to be advised as they aid in the elimination of heat as well as supply water and vitamin requirements.

Since the main physiologic problem in the tropics is the elimination of heat, therefore the use of the *shade* of trees in the selection of sites for homes and places of business aid a great deal. Buildings should be built and roofed so as to render an environment as cool as possible. Shady verandahs, shuttered windows, well insulated roofs and walls are some of the measures that promote cooling. Ventilation should be at a maximum. The use of reflection by means of shiny metal roofs, white flies over tents aid in cooling a dwelling by reflecting the infra-red rays of the sun.

Resting: A good night's rest in a cool house with at least eight hours of sleep, is essential. A midday, after dinner, rest is of great value. In addition to physical rest, mental rest with frequent vacations are to be emphasized. Not only does this promote efficiency, it aids in preventing the heat syndromes. People with conflicts and anxiety states or any of the psychoneuroses should be aided even if the advice of psychiatrists must be sought in extreme instances. People suffering with psychoneuroses cannot cope very well with the problem of heat elimination. The use of wholesome entertainment with recreation centers, especially with cool swimming pools, help. Methods to promote economic and family security are of paramount importance.

The *clothing* should not be tight and uncomfortable. It should be loose and light and should facilitate evaporation of sweat and additional heat loss by convection, radiation and conduction. The color of the clothing should be light in order to reflect light and heat. Shorts, shirts with short sleeves and low open necks are to be advised. Sun helmets which are light, well ventilated and lined with chromium foil are good.

Acclimatization is exceedingly important in facilitating one with coping with the tropical heat. It has been shown repeatedly in man and experimental animals that an animal cannot adjust very well to a sudden change to a tropical climate. People on first entering the tropics from temperate zones find it difficult to work well. These same people after a few weeks' sojourn in the tropics, work rather efficiently. The physiologic adjustments that are made with acclimatization are unknown in the main. It is well known that with acclimatization the capacity to sweat is increased manifold. The U. S. Army has long recognized the importance of acclimatization in the training of its troops for tropical campaigns by training them in the hot deserts.

Work should be planned so that the most strenuous work is done during the cooler hours of the day. The degree and duration of the work should be such as to keep heat production to a level that is within the limits of the physiologic mechanisms to eliminate the heat. After all, heat balance is an equilibrium between heat production and heat elimination which obeys the physical laws of heat transfer.

In industries the conditions under which men and women work should be comfortable. Not only should there be plenty of water and salt available, but the conditions of the immediate environment should be made cool by proper ventilation. The employees working near furnaces, and boilers and very hot machinery, should have an opportunity to rest in cooler places whenever they begin to experience the ill effects of the heat. By providing cheerful surroundings, frequent rests in cool places, plenty of cool water and plenty of salt, many men can work efficiently after acclimatization in extremely hot and humid environments.

THERAPY OF SPECIFIC NATURE

Heat Cramps: The treatment for heat cramps is empirical in the main, although certain definite curative procedures are indicated.

The patient should be removed to a comfortably cool environment as soon as possible. He should rest in bed. Many people recover without even resting but this is not to be recommended. Morphine, grain 1/4 to 1/2, should be administered immediately if the pains are severe. Avoidance of movement, external stimuli, and annoyances by observers and visitors are to be recommended as these factors are known to precipitate spasms. Hot packs over the muscles have been used, but are of relatively little benefit. The most important procedures consist of the administration of salt and water by mouth if the patient will take and retain it, or intravenously in severe acute cases. When the parenteral route is employed, 1000 c. c. or more (enough to keep the urine volume at 1500 c. c. a day) of physiologic salt solution is to be used intravenously. The usual precautions are to be followed as for all intravenous medication. When the salt is taken orally it is given as capsules or tablets, administering 15 to 20 grams daily and enough water to maintain a daily urine volume of 1500 c. c. Dextrose, orally or intravenously, may be used.

As a rule, rest in a cool place, salt and water and morphine for the severe pain result in prompt and complete recovery. Usually a 1000 c. c. intravenous infusion of physiologic sodium chloride solution is sufficient to bring about satisfactory relief of the cramps.

The blood chloride levels are easy to determine and of value in the management of these patients. A simple rule to follow in otherwise normal patients is to give enough water to insure a urine volume of 1500 c. c. in 24 hours and an adequate urinary chloride excretion. The latter may be determined by taking 5 c. c. of urine, adding a few drops of 1 per cent silver nitrate solution, and than a drop or two of concentrated nitric acid. If the chloride concentration in the urine is normal a curdy precipitate forms, if it is low there is only a hazy white color change or no change at all. In applying these rules one must remember to take into consideration the presence of organic renal disease, heart failure, edema states or large urine volumes.

Heat Exhaustion: The treatment of this disease offers no difficulties. It is essential that the patient be removed from the hot environment to a comfortably cool one and allowed to rest. Usually that is sufficient. Sodium chloride and water administered as described above for heat cramps should be used. If there is collapse, concern is necessary only in senile or chronically diseased patients. Dextrose orally or intravenously may be used in liberal amounts. Intravenous medication should be employed with caution in patients with cardiovascular disease.

Heat Stroke: The treatment of this state offers a challenge to the physician. Early and satisfactory treatment is necessary as this disease is a medical emergency. Even with the best of treatment the mortality rate is high. The patient should be placed in a hospital immediately if possible. To reduce his body temperature he may be placed in wet sheets and fanned vigorously. When possible, it is better to place him in a tub of ice water with floating ice. The temperature of such a bath is about 35° F. When the body temperature reaches 102° F. the patient should be removed and the body temperature allowed to continue to fall normally. This continued drop is often claimed to be a cause of death in patients kept in the cold water too long. These patients should also be given sodium chloride and water as described for heat cramps. Intravenous fluids should be administered cautiously to the senile or debilitated patient. Dextrose, 5 per cent solution, may be given intravenously. The salt, water, and dextrose should be given orally whenever feasible. Lumbar punctures have been used to reduce the presence of the cerebrospinal fluid. Artificial respiration should be used freely if there is any need. Oxygen may be used. When the venous pressure is markedly elevated, venesection may be practiced. Recuperation should be permitted to occur slowly with the patient in bed. Many patients have overcome heat stroke but have died a few days later of heart failure or the like, upon getting up too quickly.

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CLINICO-PATHOLOGIC CONFERENCE

PHILIP M. TILLER, M. D.
AND
FRANCIS C. COLEMAN, M. D.
NEW ORLEANS

The following clinico-pathologic conference was presented at Touro Infirmary on March 15, 1945.

Dr. F. C. Coleman: Dr. Stewart will read the clinical history.

This is the case of G. H., a white male, aged 64, who was admitted to the hospital on January 9, 1945, and died on January 18, 1945.

C. C.: Nausea and vomiting for three days.

P. I.: The patient felt perfectly well until three days ago when he suddenly developed a sharp pain in the upper midepigastrium. There seemed to be a considerable amount of gas on his stomach which aggravated his nausea. He has retained some water but no food. He has been constipated since the beginning of the present illness, whereas previously his bowel movements were regular every day. There has been no hematemesis, melena, jaundice, or clay-colored stools.

Review of Systems: *EENT*: Eye removed six years ago for cataract. *Lungs*: Morning cough productive of green phlegm since "flu" in 1918. *Heart*: Dyspneic on exertion for several years. No nocturnal dyspnea, no chest pain, and no cardiac irregularity. *G. I.*: Essentially negative until onset of present illness. *GU*: Essentially negative. *NM*: Marked weakness with tendency towards fainting.

Past History: Cholecystectomy 22 years ago. Has had ventral (incisional) hernia for 20 years.

Physical Examination: Blood pressure 130/90; pulse 70; respirations 18; temperature 98.6. *Head*: Negative. *Eyes*: Artificial eye in left orbit. *Throat*: Negative. *Lungs*: Clear to auscultation and percussion (examination unsatisfactory due to noises about the ward). *Heart*: The heart is enlarged one cm. to the left. No murmurs were heard. Extrasystoles were present at about every 10th impulse. *Abdomen*: The abdomen is flat and has a bulging incisional hernia in the midline, the ring of which measures 3 to 4 cm. in diameter. There is an indefinite mass in the midepigastrium which is slightly tender.

Laboratory Data: On January 10, 1945, urinalysis revealed an acid urine with a specific gravity of 1.024; trace of sugar; many bacteria and occasional pus cells. Repeated blood chemistries revealed a total NPN which varied from 50 mg./100 c. c. on January 10, 1945, to 34 mg./100 c. c. on January 15, 1945; dextrose level was 80 mg./100 c. c. and sodium chloride 458 mg. per cent. CO_2 combining power 52.2 volumes per cent. Serology done on January 10, 1945, was negative. A hemogram done on January 17, 1945, revealed a total RBC of 3.5 million with 72 per cent hemoglobin, a total white blood count of 8,000 with 72 per cent neutrophils, 14 per cent lymphocytes and 4 monocytes.

Electrocardiogram taken on January 16, 1945, revealed a definitely abnormal tracing with possible acute anterior occlusion.

Clinical Course: The patient was admitted on January 9, 1945, and at that time was thought to have a high intestinal obstruction. He had pain in his midepigastrium with nausea and vomiting. The nausea and vomiting subsided rapidly and the patient began to feel well. By January 13, 1945, he was permitted to be up and about in a wheel chair. On January 14, 1945, his temperature rose to 102 degrees. He had no complaints except the inability to sleep at night for which a sedative was prescribed. When he first was admitted enemas produced good results. On January 17 he was put on complete bed rest after electrocardiographic report was received. On January 18 the patient's heart rhythm was noted to be irregular with skipped beats and he complained of a severe pain over the sternum. On the afternoon the patient suddenly took two gasps, stopped breathing and fell across the bed. He was cyanotic. Auscultation of the heart revealed a rapid rate of over 300 which was thought to be ventricular fibrillation. This lasted for 30 seconds. The patient expired at 4:55 p. m.

Dr. George Stewart: I saw this patient when sent to us by one of the staff men in the back ward of surgery. We anticipated removing the incisional hernia; however afterward he complained of pain in heart, dyspnea and cardiac symptoms. With consultation we obtained an electrocardiogram which was abnormal in many respects and so postponed surgery until further recommendation from medicine.

Dr. Coleman: Are there any questions about the history?

Dr. J. D. Rives: What about the epigastric mass mentioned in the original examination but not mentioned again? What became of it?

Dr. Stewart: It remained there and stayed practically the same. We thought we could feel some hard material in the intestine but since bowels were moving perfectly and there were no more epigastric symptoms or vomiting or nausea, we decided that it would be all right until we found out more from medicine.

Dr. Philip M. Tiller: I would like to know how long a period of time elapsed from the time he gasped until he was actually dead.

Dr. Stewart: From time seen about thirty seconds.

Dr. Tiller: How long before that?

Dr. Stewart: Five minutes. Dr. Levine was on the ward at the time he had the attack. He was seen five minutes after the first episode.

Dr. Coleman: Dr. Philip Tiller will give the clinical discussion.

Dr. Tiller: We have a story of a 64 year old white man who suddenly developed epigastric pain, and who died, nine days after being admitted to the hospital, in what was apparently an acute circulatory affair. On January 6 he suddenly had epigastric pain. I presume it was severe. It was stated to be sharp, but it is not stated whether or not it was continuous pain. He became nauseated shortly after that and for three days retained no food, little water, and had no bowel movement. His blood pressure was 130/90 when first seen. Examination of the heart and lungs, even though it was unsatisfactory to the intern, indicates pretty well that he was in no circulatory embarrassment at the time; that he had no heart failure. The abdomen was flat and apparently the hernia was not the cause of his pain. The indefinite epigastric mass I think I will dismiss as a red herring. The epigastrium is almost the natural habitat of phantom masses, and I cannot make it fit in with my ideas anyway.

His urine concentrated to 1.025; the NPN 50. I think those two things indicate fairly good kidney function and an increase in NPN due to dehydration. The fact that NPN was normal shortly after that helps us in that idea. The other laboratory findings were essentially normal.

He had a mild anemia. One thing that is not mentioned is sedimentation rate. On January 16 it was 95 millimeters per hour, Westergram method, so he definitely had an increased sedimentation rate.

Four days after the onset he was well enough to be in a wheel chair. The nausea and vomiting disappeared and he apparently was strong enough, and thought well enough to be up. A cardiogram taken on the sixteenth, seven days after admission, is certainly very interesting. There are low R waves in lead I, in some places no R wave at all. The S-T segment is definitely elevated in lead I and depressed in lead III. In the precordial leads a Q wave is present in CF I, a deep Q is present in CF3 and still a Q wave present in CF5. Again in CF5 a Q wave is present that is almost the same length as the R wave in that lead. The ST segment is elevated in CF3 and CF5, is slightly elevated in CF1.

I think we can make a diagnosis of coronary occlusion on the basis of the cardiogram, but cannot say flatly that it occurred on the date that his symptoms started—on the sixth of January—because he may have had an old anterior infarct giving him his Q waves in CF1, 3 and 5, and he may have had a transient anterior ischemia causing temporary elevating of the ST segments in lead I and depression in lead III with elevation in ST segment in the precordial lead. However, for all practical purposes we can assume that the cardiogram establishes a diagnosis of acute coronary infarction in the anterior wall of the left ventricle probably in the region of the septum, and extending far laterally; a very extensive infarct.

I worked a little backward on this case because I made the diagnosis before discussing other possibilities. We are discussing this on the basis of hindsight anyway, so I guess that is probably all right. There are other things we certainly have to consider as possibilities.

If he had an intestinal obstruction as was suggested, that obstruction was transient because he certainly had no obstruction on the thirteenth of January, four days later; four days after admission. Also, things that will cause transient intestinal obstruction in a man his age are not very common. A volvulus occasionally will do it, but this is not too common a diagnosis. A volvulus that will occur and cause symptoms of obstruction and then disappear is less common. Carcinoma that causes sudden obstruction because of edema in the bowel around the area of carcinoma would probably not cause such sudden severe pain and I cannot think where the carcinoma would be, unless in the colon, that would cause obstruction, and you would expect the symptoms to be progressive over a long period of time. The gallbladder was out. It is possible—theoretically possible—that one may have colic from stones in the hepatic radicles or common duct but that gallbladder was out twenty years ago, so such an occurrence would be unusual. A perforation of a peptic ulcer in the lesser sac is a very confusing condition. The tenderness in the midepigastrium might incline us to that diagnosis just a little bit, but I would expect a higher white count than he had. Besides we have no previous history indicating peptic ulcer. Mesenteric thrombosis is again a confusing diagnosis to make. I do not think it occurred in this man because he had no previous history of vascular disturbance, it is not stated that he had bloody stools afterward, and he recovered rapidly. If it actually occurred, the thrombosis must have been small. There was no tenderness in the right lower quadrant so I guess it was not appendicitis. A pulmonary infarct is possible with a sudden onset of epigastric pain, but there were no pulmonary symptoms following that. I think I will stick to the diagnosis of coronary occlusion that began on the sixth.

There are one or two things of interest there. Why did he vomit so much afterwards? Nausea and vomiting are not too uncommon with coronary occlusion; possibly related to pain or circulatory disturbance that occurs at the time. People with coronary occlusion usually have pain severe enough to get morphine. He may have had morphine and that may have precipitated vomiting. When a patient vomits enough to become dehydrated there is almost a vicious cycle set up; dehydration continues the nausea and vomiting, and it is necessary to give fluid by vein to break the cycle. I think those things are not incompatible therefore with the diagnosis of coronary occlusion.

Now, we come to the final episode. On the eighteenth his heart rhythm was noted to be irregular. Then he had severe pain located in the region of the sternum. Following that—we do not know how long—he suddenly gasped, fell across the bed and within a period of about five minutes died. There are several things that we have to consider as possible mechanisms in this man's death. Did he have another coronary occlusion with infarction that began with pain earlier in the day and did his death result from a sudden ventricular fibrillation? Secondly, did he rupture the myocardium in the area of infarct? Thirdly, did he have cerebral embolus? He took five minutes to die. Usually with a ruptured myocardium death is almost instantaneous, sometimes lasts a time. Ventricular fibrillation usually will kill a person in thirty seconds or less. With cerebral infarct the patient may live for some time afterward. If he had a cerebral embolus, of course, it would have come from a mural thrombus in the left ventricle. It is stated that when seen his heart rate was over 300. You could safely say over 200. When you get to a heart rate that high it is a little difficult to count and it is a little difficult to be sure how fast the rate was. We are not told whether regular or not. If going over 200 I do not think I could tell. I do not think the arryhythmia was the precipitating cause of death; either myocardial rupture or cerebral embolus killed the patient, and the rapid cardiac rate heard by the intern who saw him was probably a terminal event.

Dr. Coleman: Thank you Dr. Tiller. Are there any comments from the clinical aspect of this case?

Dr. Willard Wirth: I would like to comment on the electrocardiogram. My interpretation, based upon the findings which Dr. Tiller enumerated, was that is was definitely abnormal and, as I wrote on the electrocardiogram, probable acute anterior occlusion and I also suggested that the electrocardiogram be repeated. I put my interpretation that way for reasons that Dr. Tiller has hinted at. Sometimes these changes are transitory, associated with some transitory coronary ischemia and repeated electrocardiograms will show reversal of these changes in that case, or in a case of true occlusion with myocardial infarct repeated electrocardiograms would note progressive changes and allow a more emphatic statement that it was a definite acute occlusion with myocardial infarct. This electrocardiogram is quite characteristic, however, and would be entirely compatible with an acute coronary occlusion. By acute I would say that we were not able definitely to date the acute episode from a single electrocardiogram but would supose that it was an accident that occurred within a week or maybe a little longer rather than many weeks or a month or so.

In addition this electrocardiogram showed frequent premature contractions which occurred in a fashion to produce intervals of pulsus bigeminus or coupling so at the time the electrocardiogram was taken this man had an irregular rhythm.

Dr. Coleman: Any other comments?

Dr. John H. Musser: Of course the man had ventricular tachycardia and not fibrillation. You could not count the pulse or hear the heart sounds in ventricular fibrillation. Tachycardia so often precedes fibrillation that that is one of the reasons we give quinidine to these patients.

Dr. Coleman: Are there any other comments?

Dr. I. L. Robbins: I think in a differential diagnosis, such as this, especially with severe epigastric pain, dissecting aneurysm should be considered.

Dr. Coleman: At postmortem the body weighed 100 pounds and measured 5 feet 8 inches in length. An artificial eye was present in the left orbit. Postmortem lividity was marked over the dependent portions of the head and neck. A ventral hernia was present in which was encarcerated the hepatic flexure of the colon and the right half of the transverse colon. The encarcerated bowel was reddish brown, whereas the remainder of the colon was yellowish gray. No excess fluid was present in the peritoneal cavity. No excess fluid was present in the pleural cavities. The liver weighed 1200 grams as against the normal 1500 grams. Mild nutmegging was present on the cut surface. The gallbladder was absent. The spleen weighed 100 grams as against a normal of 160 grams. The kidneys were normal in size but the outer surfaces were pitted. The hepatic flexure of the colon and the right half of the transverse colon were attached to the walls of the ventral hernia by firm fibrous adhesions. No obstruction was present. The brain grossly and microscopically showed no lesions. No lesions of the pancreas or adrenals were present. The heart weighed 325 grams. The pericardial sac was larger than normal and on external examination, had a bluish red color. It was filled with blood clot of approximately 60 c. c. in amount. This blood clot was readily removed from the anterior surface of the heart.

Three centimeters above the apex of the heart on the anterior surface there was a ragged tear in the heart muscle, measuring 1 cm. in length and 2 mm. in width. A transverse incision was made through the jagged opening and it was found to communicate with the apical portion of the left ventricle. Parallel transverse incisions were made throughout the anterior surface of the heart and the interventricular septum. A myocardial infarct was present, involving the entire anterior wall of the left ventricle and the anterior two-thirds of the interventricular septum. The infarcted muscle was soft, friable, and dull yellowish gray. This yellowish gray color was replaced by a dark reddish brown color, however, for 2 mm. to each side of the tear in the myocardium. The infarction also at this point extended down to the endocardial surface whereas throughout the remainder of its extent it did not involve the myocardium for a distance of 2 to 3 mm. below the endocardial surface. It did involve, however, the muscle completely out to the pericardium. The coronary arteries were dissected out and a thrombus 1.5 cm. in length was present in the anterior descending branch of the left coronary artery beginning 5 mm. below the origin of this vessel. This thrombus was friable and dark brown in color.

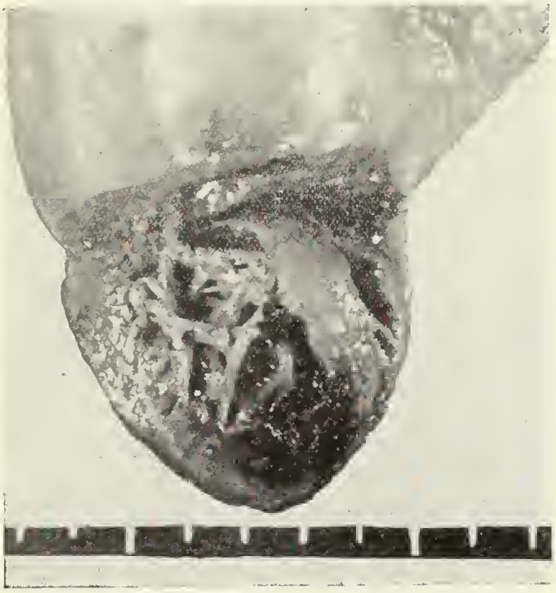

Fig. 1. Photograph of apex of heart with left ventricular chamber exposed. Note area of hemorrhage and necrosis in anterior wall.

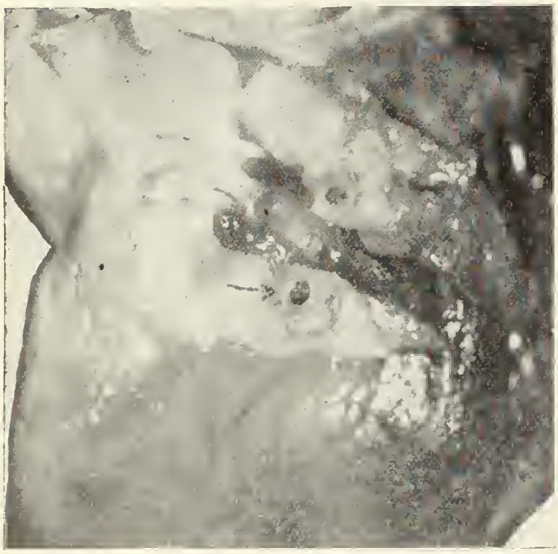

Fig. 2. Photograph of heart with anterior descending branch of left coronary artery sectioned. Note thrombus occluding the vessel.

This 35 mm. Kodachrome photograph of the heart is taken from the anterior surface demonstrating the tear in the myocardium. This 35 mm. Kodachrome photograph is taken also from the anterior surface and shows a close-up view. Note the blood clot protruding from the tear. In this photograph, the left coronary artery has been sectioned and the ends everted to demonstrate the thrombus. This low power magnification photograph of the myocardium is taken from the infarcted portion of the anterior wall of the left ventricle near the epicardial surface. The muscle fibers which remain are pale; their striations are lost and their nuclei are gone. Fragmentation is present and a smudgy type of necrosis is noted in which degenerating polymorphonuclear leukocytes are present. Some of these are noted also between the infarcted muscle fibers. This low power magnification photograph taken from the anterior wall of the left ventricle in the infarcted area shows granulation tissue growing from the epicardial surface inwards into the infarcted area. The granulation tissue is loose, moderately vascular, and a few

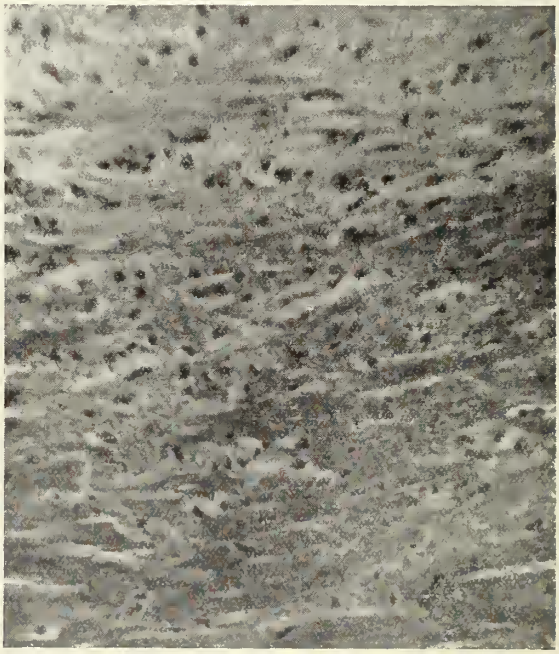

Fig. 3. Micrograph of infarcted myocardium. Note smudgy type of necrosis.

polymorphonuclear leukocytes are present. Macrophages also are present, some of which contain yellowish brown hemosiderin pigment. These macrophages are important in removing the dead muscle tissue. A few muscle fibers remain which have survived. These are surrounded by granulation tissues.

In review, the anatomic findings are:

1. Cardiac tamponade.
2. Myocardial infarction of the anterior wall of the left ventricle, and anterior two-thirds of the interventricular septum.
3. Rupture of the anterior wall of the left ventricle.
4. Thrombosis of the anterior descending branch of the left coronary artery.
5. Chronic passive congestion of the lungs, liver and spleen.
6. Ventral hernia with encarceration of hepatic flexure of colon and right half of transverse colon.
7. Chronic pyelonephritis.

Histologically, we are able to determine the approximate age of myocardial infarction. The sections in this case place the time of infarction at approximately the same time as the onset of symptoms. Nausea and vomiting without precordial pain are sometimes seen in coronary occlusion as is well demonstrated in this case. The occlusion was complete and was located in the anterior descending branch of the left coronary artery. Anastomatic circulation was poor and massive infarction of the anterior wall of the left ventricle and the anterior two-thirds of the interventricular septum resulted. A few hours before death, the first precordial pain was present. Ten days after infarction had occurred, the infarcted area had become soft enough as result of necrosis and phagocytosis of dead muscle tissue so that rupture took place. Cardiac tamponade occurred and the patient died within five minutes. The ventral hernia with encarcerated bowel was merely an incidental finding. The tumor mentioned in the history as being present in the hernia consisted of encarcerated bowel.

Next slide: *Coronory Occlusion*

1. Forty per cent occur in males over 55 years.
2. Eleven per cent of hearts studied (2.898 cases) showed evidence of coronary occlusion. The arteries were injected with a lead-agar preparation; the hearts were dissected in a special fashion so that the coronary arteries lay in one plane and x-rays taken in order to localize the occlusions. The occlusions were then carefully dissected out.
3. Two-thirds of occlusions are less than five millimeters in length.
4. Anterior descending branch of left coronary most frequently involved but circumflex branch of left coronary and right coronary also frequently involved.
5. Sixty-nine per cent of occlusions occur in proximal four centimeters of coronary vessels.
6. There is no relationship between branching of coronary vessels and localization of occlusions. This indicates that some of the older theories as to the method of branching, whether at right angles or an acute angle, have nothing to do with production of thrombosis at that point.

Changes in the myocardium following infarction:

1. Gross changes:
   - a. Earliest change—Involved area pale and drier than normal with occasional focal areas or hemorrhage.
   - b. Four days—Fine yellow line around periphery progressing in extent (leukocytic infiltration).
   - c. Ten days—Reddish purple zone around periphery (new capillaries) and removal of dead muscle begins.
   - d. Four weeks—granulation tissue with small islands of necrotic tissue remaining.
   - e. Three months—Shrunken white fibrous scar is all that remains.
2. Microscopic changes:
   - a. Four to six hours after infarc-

tion—Muscle fibers appear hyaline and striations indistinct. Infarction as a rule does not involve three to four millimeters below endocardium (Thebesian veins).
  - b. Twenty-four hours—Polymorphonuclear leukocytic infiltration begins and continues through first four days.
  - c. Fourth day—Capillaries begin to grow in. Begins peripherally pericardial surface) and extends toward the center.
  - d. Sixth day — Polymorphonuclear leukocytes are degenerating. Are gone by fourteenth day.
  - e. Tenth day—Removal of dead muscle fibers by mononuclear cells beginning at periphery.
  - f. Twelfth day—Collagen fibers formed; prominent at three weeks.
  - g. Three months—Marked scar tissue formation.
  - h. Endocardial thrombi may appear by fifth day and are organized by sixteenth day.

Myocardial infarction with cardiac rupture:

1. Eight and three-tenths per cent of fatal myocardial infarcts show rupture.
2. Age incidence of infarction with rupture parallels that of infarction without rupture.
3. Rupture most frequent in anterior wall of the left ventricle. (Anterior descending branch of left coronary most frequently involved.)
4. Rupture most likely to occur in small infarcts. (Square area of five centimeters or less).
5. Rupture usually occurs between third
6. Proportion of rupture highest in cases with small hearts and hypertension persisting after infarction. It is interesting to note that the heart in this case was normal in size.
7. If scarring is present in myocardium, rupture only one-fourth as likely as in unscarred hearts. This is thought to be due to the presence of collateral circulation and supporting action of scar tissue. For practical purposes, collateral circulation is non-existent in hearts which have not undergone infarction.
8. Cases with rupture show microscopically.
   - a. Smudgy type of necrosis with heavy infiltration of leukocytes. (Enzymatic action of leukocytes).
   - b. Hemorrhage.
9. Patients with interventricular rupture live an average of 2.25 days as contrasted with those who have a rupture into the pericardial sac. These die suddenly.

Are there any additional comments?

Dr. Allan Eustis: There is just one comment I would like to make. If you noticed, this man was up in a roller-chair four days after initial onset. For twenty years I have made patients keep in bed for two weeks after suspected coronary occlusion whether clinically well or not. It is far better to keep in bed than have an end like this where you are liable to be open to criticism.

Dr. Coleman: Any other comment?

Dr. J. R. Schenken: I would like to make one comment with regard to the survival time following cerebral vascular accidents of any type. Among those patients who die following thrombosis, embolism or spontaneous massive cerebral hemorrhage, the vast majority live more than two hours. I have never seen a patient who died in less than eight minutes following the onset of the disease. If death occurs within a few minutes it is almost certain that the cause of death is not due to some spontaneous cerebral vascular accident.

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Paul T. Talbot, M. D...........*General Manager*
1430 Tulane Avenue

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Manuscripts should be addressed to the Editor, 1430 Tulane Avenue, New Orleans, La.

THE JOURNAL *does not hold itself responsible for statements made by any contributor.*

LAY CONTROL OF MEDICAL PRACTICE

The monthly news letter from the American College of Radiology is interesting and thought provocative. In the May number of this publication there is a short presentation entitled "Medical Societies Tangle With Blue Cross." The gist of this presentation has to do with the Blue Cross proposing to contract with doctors to furnish medical practice to subscribers. The rightful contention is, should this procedure become widespread or even become started, that the hospitals would no longer be institutions for the care of the sick but as they could contract for the sale of medical services they would engage in the practice of medicine. As the officers of the Medical Society of Wisconsin say "the issue here is whether medicine is to be practiced *in* a hospital or *by* a hospital."

The reasons that the hospitals feel that they should be entitled to contract for medical services is because a beginning has already been made in doing this very thing. The American College of Radiology points out that under the Blue Cross plan in many places radiology and pathology are included in hospital benefits and that consequently if one or two specialties of medicine are to be included among hospital benefits the entering wedge has been made whereby other branches of medicine will be called upon to act under the jurisdiction of a hospital board. Such a procedure is pernicious. The controversy which is now raging in Pennsylvania and Wisconsin illustrates well indeed that once there appears a crack in the door it will not be long before the door is wide open to permit the entrance of all kinds of schemes for medical practice about which the doctor has little to say.

THE NEED FOR NURSES

There still exists, according to the Army authorities, a rather dire lack of nurses. While the Army Nurse Corps has at the present moment 51,000 nurses, they claim that they need 9,000 more. The Veterans Administration needs a 50 per cent increase in the number of nurses who are now working in that organization. It is claimed also that essential nurses are needed in industries, national and state public health services, in schools and other places where a nurse is deemed essential to the proper care of war casualties and to fill civilian needs.

It might be pointed out that there are slightly under 300,000 nurses in the country at the present time. There are also many inactive or retired nurses. In addition to the available nurses, slightly under 200,000 volunteer nurses aides have completed their training and some 50,000 of these young women are now serving in hospitals.

While there may be a need for additional women to enter the nursing profession and there may be a lack of nurses for essential nursing positions we cannot help but feeling that many nurses are filling positions which certainly do not require women who are trained in the profession of nursing. It seems not so remarkable that with 62,000 nurses in the armed services that there is a so-called shortage of nurses. Looking back to the days of the depression, nurses literally, unless unusually qualified, were starving. There was a tremendous surplus of nurses at that time. When and if the boom times of war quiet down again, there will be a difficulty in finding positions and jobs for the large number of women who, under the stimulus of governmental subsidy, are being trained in nursing schools. Many of these nurses-to-be will find it will be impossible to make a living in their profession. We are skeptical about the so-called need of thousands of more nurses and feel that the exaggeratedly large number of nurses now being added each year to the profession will make it difficult if not impossible for many of these women to make a living in their profession.

PENICILLIN IN ASTHMA

At times one of the most intractable and difficult conditions to treat is bronchial asthma. Fortunately in the great majority of cases it is possible to determine the allergen to which the patient is sensitive and by excluding contact with that allergen the patient's asthma may be entirely relieved. When this is not possible, the allergists in many instances are able to desensitize the patient so that his reaction to the offending antigen or antigens which cause trouble is reduced to a minimum or entirely deleted. There are, however, a certain number of patients in whom treatment is notably ineffective. This group of patients usually suffer from intrinsic asthma, that is, the type of asthma which, according to Rackemann, "the cause of the trouble lies within the body." In extrinsic asthma the offending cause can usually be determined but in the intrinsic type there is some unknown factor, the "x factor," which is responsible for the symptoms but what this antigen is cannot be detected bv any diagnostic procedure.

Penicillin has been used for almost every condition, disease or disorder to which man is heir, even cancer. It has been found to be unexpectedly effective in many conditions which it is hard to believe the drug would benefit. In intrinsic asthma, however, it is possible that the x factor may be bacterial. That this supposition may be true is confirmed by a paper by Leopold and Cooke* in which they detail two case reports in which penicillin was employed with rather remarkable results. In both these two treated individuals the asthma continued despite every type of treatment over a long period of time. Penicillin was then administered and both of the two patients showed a remarkable improvement. These two physicians, both men of reputation and standing, also have under treatment twenty-five other patients with intractable asthma. They say it is too early to comment upon the results of the treatment of these patients but that it is obvious penicillin is not a panacea for all cases of asthma due to infection, as some of the patients have failed to show improvement with penicillin therapy. Be that as it may, the report of these two observers would indicate the use of penicillin in intractable cases of asthma when other forms of therapy have proved ineffective.

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*Leopold, S. S., and Cooke, R. A.: Penicillin in the treatment of intractable bronchial asthma. A preliminary report, Am. J. Med. Sci., 209:784, 1945.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

THE NEW WAGNER BILL

(S. 1050)

The above bill was introduced in the Senate on May 24, and referred to the Senate Committee on Finance, of which Senator George, of Georgia, is chairman. There is a companion bill introduced in the House by Mr. Dingell, known as H.R. 3293. There has been a great amount of literature from various medical circles, attempting to analyze the provisions of these comprehensive amendments to the Social Security Act. The new bill is 185 pages and contains therein all the different propositions offered for social security. Following is a brief summary of the provisions of the bill:

Section 1—Short Title: Social Security Amendments of 1945.

Sections 2 and 3 provide for grants and loans to states for construction of hospital and health centers.

Sections 4 and 5 provide for federal grants to states for expansion of public health, maternal and child health, and welfare services.

Section 6 provides for federal grants to states for an expanded comprehensive public assistance program.

Sections 7 and 8 provide for continued federal operation of the United States Employment Service.

Section 9 establishes a National Social Insurance System, in eight parts:

A. *Prepaid Medical Care Insurance,* including services of physicians, surgeons, dentists, nurses, use of laboratory and x-ray equipment, and hospitalization, up to 60 days a year or possibly longer; covers all employees and dependents except self-employed.

B. *Unemployment and Temporary Disability Insurance*—up to $30 a week for 26 weeks or longer. Covers employees, except self-employed.

C. *Retirement, Survivors' and Extended Disability Insurance Benefits* — expands present OASI system as to benefit scale to a maximum of $120 per month and a minimum of $20 per month. Retirement age for women reduced to 60 years. Total disability benefits on same scale. Lump sum death benefits to spouse.

D. *National Social Insurance Trust Fund* established.

E. *Credit for Military Services* based on $160 wages for each month of military service.

F. *Extends Coverage* to about 15 million additional persons.

G. *Contribution Rates* established at 4% on first $3600 for earnings for employee, same for employer; 5% of value of services up to $3600 for self-employed.

H. *General Provisions.*

In the June 2 issue of the Journal of the A. M. A., page 364, there appears a most interesting and instructive editorial. On page 369 of the same issue is an analysis by the A. M. A. Bureau of Legal Medicine on the compulsory medical insurance features of the bill.

It may be of interest to you to know, from the statements made by Senator Wagner, the groups which are supporting him in the *rearrangement* of this bill in comparison with his federalization bill of the 78th Congress, known as Senate Bill 1161. He states that he has consulted the American Federation of Labor, the Congress of Industrial Organizations, the Physicians Forum, the Committee of Physicians for the Improvement of Medical Care (original 400) and the National Lawyers Guild, among other organizations and has secured approval of these groups for the changes made. Space will not permit an extensive analysis of the policies of these groups; however, we do know that, with the exception of the National Lawyers Guild which we have recently learned is an organization not approved by the American Bar Association, they supported the first Wagner bill. Senator Wagner did not, however, take into his confidence any representative group of the A. M. A.

The above information is being brought to your attention for the specific purpose of asking that you write to your congressman or senator, secure a copy of this bill, read it, make up your mind about it, and write a letter to him expressing your views concerning same. It is urgent that you attend to this important detail now.

In the June 9 issue of the Journal of the A. M. A. there is a letter from Senator Wagner explaining his attitude toward the medical profession and stating specifically that he is opposed to socialized or federalized medicine. This is rather paradoxical in view of the various provisions of the bill which permit the Surgeon General of the United States Public Health Service to direct and supervise the practice of medicine and its various allied branches. One who has studied this subject seriously cannot help but realize the past and present neglect in preventive medicine activity. Some seem to centralize their ideas on the thought that the existing system of medical practice is inadequate and must be changed. The causative factors of illness, such as improper nourishment, vicious habits, ignorance, heredity, and modes of living, dependent upon poverty or illiteracy, are given little attention by these propagandists who propose a new social order for our medical practice.

The best information we have is that the hearings on the Wagner-Murray-Dingell bill will not be held for some time. The 1945 edition is twice as long as the 1943 volume. It is indicated, first, that this will not be rushed through Congress; second, that plenty of time for analysis and study by local medical groups will be given; and third, that the up-to-date press comment, generally, has not been overenthusiastic about the bill.

The bill includes almost entirely the contents of Senate Bill 191, known as the Hospitalization Bill. Fortunately, or otherwise, for the proponents of Senate Bill 1050, Senate Bill 191 has been approved, in substance, by the A. M. A., the American Hospital Association and the American College of Surgeons.

It is also very desirable that after you have given this critical subject your serious attention, you communicate with the executive officers of the State Society, giving them your opinion and information as to any action taken by you in opposition to same. Our Committee on Congressional Legislation is studying the provisions of this bill and any communications on the subject addressed to 1430 Tulane Avenue, New Orleans, with constructive suggestions, will be greatly appreciated.

The Veterans Administration is still under fire. All kinds of bills, investigations and allegations have been offered in Congress, by the lay press and officers of the U. S. government. It appears that the administration will be completely reorganized in an attempt to supply medical and hospital facilities to meet the growing demands of returning veterans.

Information appears in the press, as well as in medical circles, that some of the medical officers returning from Europe since V-E Day are being assigned to permanent positions in the Veterans Administration. This is against the wishes of the medical officers and protests have been made by the Committee on Postwar Medical Service of the A. M. A. to the Surgeon Generals of the Army and Navy objecting to such a procedure. It was hoped that some 9,000 doctors would be returned from Europe and discharged with the 1,800,000 military personnel. These doctors are acutely needed in certain areas of our state where the civilian doctors have been under a tremendous strain during the war.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR OF MEETINGS

July 4.	Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
July 5.	Clinico-pathologic Conference, Touro Infirmary, 12 noon.
July 9.	Scientific and Second Quarterly Executive Meeting, Orleans Parish Medical Society, 8 p. m.
July 18.	Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
July 19.	Clinico-pathologic Conference, Touro Infirmary, 12 noon.
July 25.	Catholic Physicians' Guild, 8 p. m.
July 26.	DePaul Sanitarium Staff, 8 p. m.
July 27.	L. S. U. Faculty Club, 8 p. m.
	New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.

The June scientific meeting of the Orleans Parish Medical Society, which was held on June 11, was presented by members of the faculty of the Louisiana State Medical Center. Drs. Jesse Colley and Wallace Sako presented a paper on Pneumococcus Meningitis in New Born Infants; Mr. D. Postell read a paper on Early History of Tuberculosis in Louisiana; and Dr. C. A. Stewart read a paper on Congenital Absence of the Lung.

NEWS ITEMS

The following members of this Society addressed the annual meeting of the Louisiana Medical, Dental and Pharmaceutical Association held May 15-16 at Flint-Goodridge Hospital: Drs. R. E. Arnell, O. W. Bethea, Val Fuchs, John H. Musser, Paul T. Talbot, Sidney L. Tiblier, Waldo A. Treuting and Theo. A. Watters.

Dr. Sidney Jacobs spoke on Immigration Into Palestine at a recent meeting of the Tulane University-Newcomb College War Forum.

At a recent meeting of the Louisiana Association of Pathologists Dr. Norman T. Conant, associate professor of bacteriology, Duke University, spoke on Microbe Diseases in Man. Dr. J. W. Davenport, Jr., presented a paper on Practical Aspects of Rh Blood Type.

The following officers for the ensuing year were elected: Dr. William H. Harris, president; Dr. C. H. Binford, vice-president, and Dr. Emma S. Moss, secretary-treasurer. Dr. John R. Schenken, the retiring president, will serve as a member of the executive committee.

Dr. P. Jorda Kahle was recently elected an honorary member of the L. S. U. Undergraduate Honorary Scholastic Medical Society, the Circle, in recognition of his original work in the use of stilbestrol in the treatment of carcinoma of the prostate. Dr. Kahle addressed the Society at the annual Circle banquet; his subject was, Review of Forty Years of Progress in the Field of Urology.

At the annual meeting of the board of directors of the Tuberculosis Association of New Orleans held May 3 in the Hutchinson Memorial Auditorium the following members of this Society were elected to office: Dr. John H. Musser, re-elected president; Drs. Julius Lane Wilson, William A. Sodeman, Chester A. Stewart, Edwin L. Zander, John M. Whitney, Louis A. Monte and Maurice Campagna, members of the board.

Dr. Howard Mahorner was chairman of the wartime graduate medical meeting held at the United States Naval Hospital on May 23. At this meeting Dr. Philip M. Tiller, Jr., gave a dry clinic; Dr. Leon Menville spoke on roentgenology in diagnosis of bone tumor; Dr. Alton Ochsner spoke on neurovascular lesions, and Dr. Theo. Simon spoke on low back pain.

The following members of the Society attended a recent discussion meeting under the auspices of the Medical Advisory Committee of the Office of Scientific Research and Development in New York City: Drs. George Burch, B. I. Burns, Alton Ochsner and John R. Schenken.

Dr. Emma Moss was recently promoted from lieutenant to captain in the Civil Air Patrol.

Dr. John H. Musser was recently elected a member of the National Board of Medical Examiners.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	**Second Wednesday of every month**	**Baton Rouge**
Morehouse	**Second Tuesday of every month**	**Bastrop**
Orleans	**Second Monday of every month**	**New Orleans**
Ouachita	**First Thursday of every month**	**Monroe**
Rapides	**First Monday of every month**	**Alexandria**

Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

SECOND DISTRICT MEDICAL SOCIETY

At a recent meeting of the Second District Medical Society held in LaPlace, the following officers were elected for the year 1945: President, Dr. J. W. Atkinson, Gretna; Secretary-Treasurer, Dr. Robert A. Katz, New Orleans.

EIGHTH DISTRICT MEDICAL SOCIETY

A meeting of the Eighth District Medical Society was held in Alexandria on June 4. Dr. Edgar Hull, professor of medicine of L. S. U., presented a paper entitled "Errors in Academic and Practical Diagnosis." The Secretary of the State Society, Dr. P. T. Talbot, was present and made a talk on modern trends of medicine, especially in relation to congressional action in Washington.

Doctors in Louisiana, as well as throughout the country, should be interested to know that a bill proposing compulsory health insurance which was submitted to the California Legislature was recently defeated by a large majority.

SOUTHERN MEDICAL SOCIETY

It is with regret that we announce the death of Dr. Edgar G. Ballenger, President of the Southern Medical Association.

Dr. Ballenger died on the first of June as a result of a fall from the seventh floor of an Atlanta hotel. He will be succeeded by Dr. E. Vernon Mastin, who was elected Vice-President of the Southern Medical Association at the last meeting.

REGULATIONS FOR USE OF DIATHERMY MACHINES

Following is copy of letter which was forwarded to the office of the State Society by Senator John Overton subsequent to correspondence with him concerning information on this subject. Copy of the report mentioned in this communication is on file in the office of the Secretary-Treasurer and may be reviewed by any member who desires further data in this regard.

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D. C.

May 26, 1945

Dear Sir:

This is with reference to our previous correspondence concerning the proposal of the Commission to allocate certain frequency bands in the radio spectrum for the use of medical equipment such as diathermy apparatus. The Commission's proposal in this regard was set forth in its report of January 15, 1945, and was later the subject of oral argument and briefs filed by interested parties. After having carefully reviewed all available data including that presented in briefs and at oral argument the Commission on May 17, 1945, announced a final allocation of frequencies for medical use and on May 25, 1945, issued a report discussing the basis for that allocation. In view of your interest in this matter we are enclosing a copy of that report for your information.

You will note that the final allocation for medical use consists of the following three frequency bands:

Center Frequency Megacycles	Band Width (% of Center Frequency)	Band Width (Kilocycles)
13.66	±.05%	15
27.32	±.5%	270
40.98	±.05%	40

With one change this final allocation is the same as that originally proposed by the Commission in its report of January 15, 1945. The change consists of an expansion of the 27 megacycle band from an originally proposed width of plus or minus .05 per cent of the center frequency to a width of plus or minus .5 per cent of that frequency. In terms of kilocycles this has involved an increase in the size of the band from a proposed width of approximately 27 kilocycles to a width of 270 kilocycles. As explained in the report, the expansion of the 27 megacycle band to a width of 270 kilocycles is based upon the recommendation of witnesses representing the medical service that a comparatively wide band of that width be made available for medical use. The Commission was assured by those witnesses that with this change its proposed allocations would prove satisfactory for medical purposes and that it would be practical to manufacture non-crystal controlled high frequency medical apparatus capable of satisfactorily operating within the width band in question with only a moderate increase in the initial cost of equipment and with no increase in maintenance expense. This is further discussed in the section of our report designated "Final Allocation for Industrial and Medical Use."

Your attention is also directed to the last page of the attached report which, in addition to summarizing the final allocation of frequencies for medical use, discusses the effect of that allocation on the operation of medical and industrial apparatus. As explained there, it is contemplated that equipment manufactured subsequent to May 25, 1945, the date of our report, will be required to be operated within assigned channels or in such a manner as to prevent interference to radiocommunication. Existing equipment will, in general, be permitted to operate as before for a reasonable period of time to be designated later.

Very truly yours,
/s/ T. J. SLOWIE, Secretary

Enclosure

BASE HOSPITAL No. 64

The following details of the activities of General Hospital No. 64 which have been passed by the censor were sent by Col. C. J. Miangolarra, Chief of the Surgical Section and second in command of the Unit, under Col. T. H. Reagan. The Unit is sponsored by Louisiana State University School of Medicine.

After a little more than a year in camp at Fort Jackson, S. C., the Unit was sent overseas. Its first assignment was in North Africa near Terryville on the Tunis Road about fifteen miles from Mateur where it was set up in a tent hospital. The Army approved of this setup to such an extent that they used it as a pattern for similar units.

Dr. Miangolarra wrote that he was particularly proud of the surgical staff and felt that the excellent job it had done would be a credit to its sponsors and particularly to the Army. As an example of their activities during one twenty-four-hour period, he said that the Unit had handled 700 fresh casualties, none of whom spoke English, most of them being French and French colonials.

The second station was at Maddaloni which was near Leghorn. The Unit arrived at this location just seven days after the Germans had left. It was then moved to Ardenya where the Colonel facetiously remarked that the Germans were quite busy, shelling within a mile of the hospital and sending bombers over every night. Fortunately, there were never any direct hits on the hospital. At one time the hospital was caring for 2,800 patients.

While this is not official, it has been reported that the over-all mortality was in the neighborhood of one per cent.

CAPTAIN JACOBS HONORED

Captain Warren M. Jacobs, son of Dr. Adolph Jacobs, after completing his internship at Touro entered the Army. Recently Captain Jacobs was awarded the Bronze Star Medal. The citation reads as follows:

Captain Warren M. Jacobs, 0-426157, Medical Corps, United States Army, for meritorious service in connection with military operations against the enemy, from 11 February 1945 to 12 April 1945, in Germany. As Battalion Surgeon, Captain Jacobs carried out his duties in an exemplary manner despite the most adverse conditions. The speed and efficiency in which he handled casualties resulted in a remarkable record of achievement. His untiring effort throughout the period was an inspiration to his men. His ability, leadership, and devotion to duty reflect the highest credit upon Captain Jacobs and the armed forces of the United States.

By command of Major General Reinhardt:
H. Pengelly,
Lt. Col., A. G. D.,
Adjutant General.

NEWS ITEMS

The semi-annual refresher course in otolaryngology, which the University of Illinois conducts, will be held this year from September 24-September 29.

An illustrated lecture seminar integrating the patho-physiological reactions of the human to the environment and covering a wide range of medical problems of interest to the practicing physician will be conducted by Dr. William F. Petersen commencing Monday, September 17th, and extending through the 22nd. Sessions from 9:30 to 4:30 each day in the Conference Room of the Institute of Medicine, Chicago. Detailed information, program, registration applications, can be obtained from the Secretary, Institute of Medicine of Chicago, 86 E. Randolph Street (Crerar Library Building), Chicago. Enrollment limited.

Major Robert C. Kemp, of Baton Rouge, is now serving in an Army Medical Hospital in England.

The weekly bulletin from the Office of the Surgeon General announces the promotion of Daniel Joseph Fourrier, of Baton Rouge, from lieutenant colonel to the rank of colonel. Colonel Fourrier has been in the service since 1940.

Dr. W. H. Block is completing his fiftieth year in the practice of medicine. He attended at Baltimore on June 16th a reunion of the graduating class of 1895.

OFFICE SPACE AVAILABLE

Two full offices, with examining rooms, laboratory, dressing rooms on first floor. Second floor has operating room, kitchenette, eight hospital rooms with every hospital convenience. For further information communicate with Mrs. Winston Borum, 2221 Line Avenue, Shreveport.

BAPTIST HOSPITAL

The Clinical Staff of the Southern Baptist Hospital met at 8 p. m. May 22, 1945, Dr. Sam Hobson presiding.

The case of the month, "Acute Yellow Atrophy of the Liver," was discussed by Dr. R. W. Sharp, representing the Interne Corps.

Dr. H. R. Unsworth presented a case exhibiting psychiatric and neurologic findings due to advanced years and dietary deficiencies.

A motion picture entitled "Radium Treatment of Cancer of the Cervix," filmed under the direction of Dr. Max Cutler, was shown.

Dr. Eugene Countiss presented "A Review of the Carcinoma of the Uterus Deaths at the Southern Baptist Hospital." His paper was discussed by Drs. J. T. Sanders and W. D. Beacham. Dr. P. M. Tiller gave a report of the deaths which included five cases of malignancy. There was one case of typhus fever and another of agranulocytosis.

The attendance at the meeting was excellent.

W. D. BEACHAM, Secretary

CHARITY HOSPITAL

The monthly meeting of the Medical Division of the Charity Hospital Visiting Staff was held on Tuesday, June 19, at 8 p. m. in the Hopsital Auditorium. The following program was presented: Torula Meningitis, by Drs. L. C. Hamilton and P. Thompson; The Salicylate Treatment of Rheumatic Fever in Children, by Drs. Rose Coleman and C. A. Stewart; a case presentation by Dr. S. Nelken.

OCHSNER CLINIC

A meeting of the Ochsner Clinic Staff members and fellows was held Friday, May 25, at 8:30 p. m. The program included two presentations, the first by Dr. Ralph Platou on congenital syphilis illustrated with numerous Kodachrome pictures. Dr. John C. Henthorne then discussed malignant cells in pleural effusions.

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE—SOUTHERN SECTION

A meeting was held Friday, May 25, 1945, at 8 p. m. in the L. S. U. School of Medicine. The following program was presented:

Synaptic Connections in the Dorsal Root Ganglia. L. Matthew N. Bach (introduced by Dr. H. S. Mayerson), Department of Physiology, Tulane University School of Medicine.

Role of Antidromic Fibers in the Maintenance of Vascular Tone. L. Matthew N. Bach (introduced by Dr. H. S. Mayerson), Department of Physiology, Tulane University School of Medicine.

The Spatial Relationships of the Mean Electrocardiographic Axes. Richard Ashman, Department of Physiology, L. S. U. School of Medicine.

Pneumococcic Meningitis in a Newborn Infant with Recovery. Jesse Colley and Wallace Sako (Introduced by Dr. Richard Ashman), the Charity Hospital of Louisiana and the Department of Pediatrics, L. S. U. School of Medicine.

Studies on a Case of Congenital Absence of One Lung. Rena Crawford, John S. Ladue, and Chester A. Stewart (Introduced by Dr. Richard Ashman), Department of Pediatrics and Medicine, L. S. U. School of Medicine.

Corrosion Studies of the Blood Supply of the Human Kidney. George N. Ronstrom (introduced by Dr. A. G. Eaton), Department of Anatomy), Department of Anatomy, L. S. U. School of Medicine.

Plasma Chloride and Bicarbonate after Potassium Administration. Walter S. Wilde and Frederick P. Ferguson (Introduced by Dr. A. G. Eaton), Department of Physiology, L. S. U. School of Medicine.

INFECTIOUS DISEASES IN LOUISIANA

For the week ending May 5 the weekly morbidity report for the State of Louisiana contained a statement of the previous month concerning venereal diseases. During this month there were listed 1717 cases of gonorrhea, 1805 of syphilis, 30 of chancroid, 13 of granuloma inguinale and eight of lymphopathia venereum. For this particular week other reportable diseases included unclassified pneumonia 204 cases, cancer 161, pulmonary tuberculosis 138, malaria 53, pneumococcic pneumonia 46, measles 39, septic sore throat 19, mumps 16, whooping cough 11, and tuberculosis, other than pulmonary, ten. Three cases of poliomyelitis were reported this week from three different parishes in the state. Strange to say there were also reported four instances of smallpox. Thirteen of the patients with malaria contracted their disease outside of Continental United States. For the next week in May which ended on the twelfth, the following diseases were listed in numbers greater than ten: 53 cases of malaria, 26 of measles, 19 of pulmonary tuberculosis, 14 of unclassified pneumonia, and 16 of mumps. For the week which came to a close on May 19, listed in order of frequency, were the following diseases: pulmonary tuberculosis 32 cases, hookworm infection 27, measles 25, influenza 14, mumps and chickenpox 13 each, unclassified pneumonia 12 and 11 cases of malaria, all of which were contracted outside of the United States except one. One case of poliomyelitis was listed this week and one of epidemic encephalitis. There was apparently an epidemic of measles the week which terminated May 26 because there were reported 248 cases of this disease. Next in order of frequency there were reported 80 cases of pulmonary tuberculosis, 70 of malaria, 21 of unclassified pneumonia, 18 of septic sore throat, 16 of chickenpox and 12 of scarlet fever. Five cases of endemic typhus fever were reported this week and two cases of epidemic encephalitis. Of the 70 cases of malaria, only 18 were contracted outside of the United States. The report for the week which closed June 2 listed the venereal disease statistics for the previous four weeks. There were reported 2621 cases of gonorrhea, 1151 of syphilis, 26 of chancroid, 17 of granuloma inguinale and 12 of lymphopathia venereum. Other reportable diseases showed 176 cases of cancer, 129 of unclassified pneumonia, 76 of pulmonary tuberculosis, 41 of pneumococcic pneumonia, 27 of malaria, 22 of measles and ten each of mumps and German measles.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported that for the week which ended May 12 there were exactly the same number of deaths in the City of New Orleans as there were in the previous week. The distribution of these deaths showed that 78 of the persons who died were white, 49 colored and 11 were children under one year of age; again this is the same number as in the previous week. For the week ending May 19 the number of deaths was almost identically the same as for the previous two weeks as 126 New Orleanians succumbed this week. Seventy-four of the deaths were in the white population, 52 in the non-white and eight were children under one year of age. For the week closing May 26 there was a sharp increase in the number of deaths, 155 people dying in New Orleans this week, 98 of whom were white, 57 colored, and ten children under one year of age. There were 20 less deaths for the week which closed June 2: 89 of these people who died were white and 46 were colored, with 11 children under one year of age. For the week which ended June 9 the 128 deaths were divided 86 white, 42 non-white and 13 in children under one year of age.

BRITISH HEALTH IN THE SIXTH YEAR OF WAR

The British Information Services supplies the following figures on British health for 1943.

In the first place, general health was better than it is usually in peace time. The number of births is the highest it has been since 1928; 30,000 more children being born than in 1942.

Deaths due to enemy action on the British Isles were 2367. These deaths, of course, occurred as a result of bombing.

There has been a continuous rise in the death rate from tuberculosis as well as a rise in the number of new cases. Venereal diseases have likewise shown a very considerable increase.

Occupational diseases present a new problem because of the many new substances used in the present day; plastics for example.

There is no evidence that there has been any increase in the serious cases of mental breakdown. There has been, however, a large number of eye injuries due to flying glass.

This very much summarized report of the British health in six years of war should be most encouraging to the British people. It is to be expected that tuberculosis and venereal diseases will increase during war but the excellent general health of the population apparently has been maintained in spite of stress of war and the probable food limitations.

DR. EDWARD F. BACON
(1875-1945)

Dr. Edward F. Bacon died at the age of seventy at Hotel Dieu, June 5. Dr. Bacon for many years was active in the Orleans Parish Medical Society and the Louisiana State Medical Society. He has had a long noteworthy career. He graduated from Tulane in 1904. Shortly after his graduation he was one of the doctors that helped combat the last yellow fever epidemic, acting as an assistant surgeon in the Public Health Service. During the World War he served in this country and abroad. For many years he was associated with the City and State Boards of Health. Generations of medical students will place Dr. Bacon as the brother of Mr. John A. Bacon, who was connected with the Tulane Medical School around forty years, and who though retired is still active and in excellent health.

DR. JOHN PRACHER
1883-1945

Dr. John Pracher, of Monroe, died March 30. He was clinical pathologist and bacteriologist for St. Francis Sanitarium from July, 1927, until his death. He was a member of the American Society of Clinical Pathologists, the Ouachita Parish Medical Society and the Louisiana State Medical Society.

One of Dr. Pracher's two children, a graduate of the L. S. U. School of Medicine, is a captain in the Medical Corps of the U. S. Army.

DR. LEWIS A. GOLDEN
1903-1945

The tragic death of Dr. Lewis A. Golden occurred in the Touro Infirmary on June 22 after a protracted illness. Dr. Golden, since his arrival in New Orleans nine years ago, had made a most enviable reputation for himself. He was looked upon as one of the outstanding psychiatrists in the community. He was a member of the staff of Touro Infirmary, Charity Hospital and the Ochsner Clinic. He was past president of the New Orleans Society of Neuropsychiatry and was a member of the Louisiana State Board of Institutions. He was consultant at the United States Marine Hospital, American Red Cross and the Child Guidance Center.

BOOK REVIEWS

We regret that the printers deleted in the June issue the last five lines of the review of "Patients Have Families" by Henry B. Richardson. These lines read: The conclusions are definite and the worker will be able to see the application of his efforts in the management of the case. The author is to be complimented on his excellent management of a difficult subject.

The author of this review is Dr. G. McHardy.

Forsdike's Textbook of Gynaecology: By J. H. Peel, M. A., B. M., B. CH. (Oxon), F. R. C. S., M. R. C. O. G., New York, Grune and Stratton, 1944, Pp. 440. Price, $5.75.

A textbook, well adopted for the medical student as well as for the general practitioner, has been considerably rearranged, the subject matter being presented in a most orderly fashion. New chapters have been inserted dealing particularly with the more modern ideas on the physiology of the female reproductive organs. The chapter on endocrinology is particularly clear. There has been appended a list of available hormone preparations used in this country and Great Britain. The text is well written, pleasant to read because of good print and paper, also contains excellent drawings and plates.

Adolph Jacobs, M. D.

Avitaminoses: By Walter H. Eddy, Ph. D., and Gilbert Dalldorf, M. D. Baltimore, Williams & Wilkins Company, 1944. Illus., 438 pp. Price $4.50.

The third edition of "The Avitaminoses" was indicated by the successful reception of the previous publications and further by the advance in knowledge on the subject during the three-year interval since the second edition. Demand for a third edition is a compliment to the authors and confirms the value of their efforts. Justification at this time for a re-editing and revision becomes apparent when one notes the extensive additions and changes in the text.

It is a remarkable text that should enjoy favorable comment. There are four hundred thirty-eight condensed pages with a minimal paper waste. When one realizes that this work evolved from "The Vitamine Manual" of 1929 which was written by the senior author and has developed to a well digested review of the enormous vitamin literature which requires a thirty-four page bibliography, an appreciation of the authors' efforts is forthcoming.

The title is misleading for the material covered embodies all aspects of vitamins, their chemistry, pathology, function, clinical aspects, the deficiencies at all levels, their relation to systemic and nutritional diseases, assay methods, diagnostic tests and the prophylaxis and therapeusis of deficiency.

The volume is divided into three parts. The first section of one hundred twenty-three pages is an evaluation of the vitamins, the second portion of two hundred twenty-eight pages covers the deficiency states and the third section of one hundred pages treats with the technical methods of vitamin assay.

It is an excellent, easily readable text, scholarly and complete. Despite necessary technicalities, the physiologic chemist and the clinician can read it with equal enjoyment as an authoritative coverage of our knowledge on a still rapidly evolving group of entities.

Gordon McHardy, M. D.

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The Blakiston Company, Philadelphia: Men Under Stress, by Roy R. Grinker, Lt. Col., M. C., and John P. Spiegel, Maj., M. C.

E. P. Dutton & Co., Inc., New York: Doctors at War, edited by Morris Fishbein, M. D.

The Foundation Press, Inc., Chicago: Law in Medical and Dental Practice, by Jack Neal Lott, Jr., and Robert Hanes Gray.

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Paul B. Hoeber, Inc., New York and London: Fundamentals of Pharmacology, by Clinton H. Thienes, M. D., Ph. D.

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Charles C. Thomas, Springfield, Illinois and Baltimore, Maryland: The Fundamentals of Electrocardiographic Interpretation, by J. Bailey Carter, M. D., F. A. C. P.

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SOME COMMENTS ON THE EARLY LITERATURE OF GERIATRICS IN AMERICA

WILLIAM DOSITE POSTELL†
NEW ORLEANS

Recently there has been a great deal of interest shown in the treatment of the aged, so much so that one may obtain the impression that the study of geriatrics is of a comparatively recent origin. However, an examination of the literature reveals some very interesting facts in regard to this newest specialty.

The art of caring for the aged is as old as the art of scientific medicine. Hippocrates made a number of observations on the aged. He noted that as a rule they complained less than the young, but from his keen insight into disease he concluded that such chronic ailments that do occur in the aging body rarely leave it. He summarized the diseases of old age as follows[9]:

"Old men suffer from difficulty of breathing, catarrh accompanied by coughing, strangury, difficult micturition, pains at the joints, kidney disease, dizziness, apoplexy, cachexia, pruritus of the whole body, sleeplessness, watery discharges from the bowels, eyes and nostrils, dullness of sight, cataract, hardness of hearing."

Avicenna (980-1037) devoted one of his theses to the care of the aged. Thesis three of the preservation of health is entitled, "General Remarks on the Regimen of Old Age.[8]" Avicenna discussed such topics as diet, exercise, rest, and few drugs that should be administered in the case of bowel obstruction.

Roger Bacon's (1214-94) doctoral dissertation was entitled, "The Cure of Old Age and the Preservation of Youth[1]." It was this book which presaged the modern attitude in geriatrics.

The first work on geriatrics to appear in America was that of Luigi Cornaro, "Sure and Certain Methods of Attaining a Long and Healthy Life[5]." This work was written in the 16th century and translated and published in America in 1793. The preface to this first American edition was written by Joseph Addison and in it he elaborated on the efficacy of proper exercise. Cornaro's work written at the age of 83, enjoined the aged to be temperate in all things.

In 1805 Benjamin Rush published as part of his "Medical Inquiries and Observations" a chapter entitled, "An Account of the State of the Body and Mind in Old Age; with Observations on its Diseases." He attributed longevity to heredity, temperance, mental alertness, equanimity of temper and matrimony. "In the course of my inquiries I met with only one person beyond eighty years of age who had never been married[10]." He next discussed the phenomena of the body and mind which occur in old age. These phenomena were: "a great sensibility to cold; an appetite for food is generally increased; the pulse is generally full; the marks of old age appear earlier in those who have combined with hard labour, a vegetable or scanty diet; old men tread upon the whole base of their feet at once in walking; the breath and perspiration of old people have a peculiar acrimony; eyes change to a light colour; failure of memory; moral or religious faculties were not impaired; dreaming is universal of old age, and the fear of death appears to be much less."

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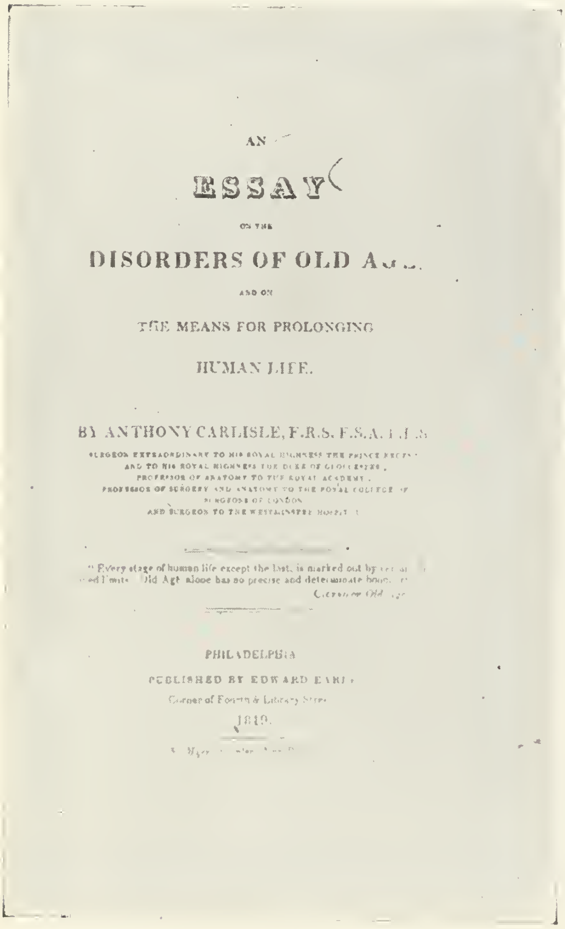
†Librarian Louisiana State University School of Medicine.

Next is discussed the diseases of old age, listed as: "weakness of the knees and ancles, pains in the bones, involuntary flow of tears, difficulty of breathing, costiveness, inability to retain the urine, wakefulness, giddiness, deafness, imperfect vision, inflammation of the eyes, pneumonia notha, colic, palsy and apoplexy, piles, difficulty in making water, and quartan fever."

The therapeutic measures to be taken were simple. Rush recommended the application of heat, warm clothing, company of young people, gentle exercises, cleanliness and bleeding.

In 1819 there was published in Philadelphia a little book entitled, "An Essay on the Disorders of Old Age," by Anthony Carlisle. Carlisle discussed the care of the aged almost entirely from the regulation of the diet. For as he said: ". . . the wholesome regulation of diet, clothing, exercise and air, are often more important than the administration of drugs, blisterings, or bleedings[3]." Therapeutic measures recommended were the use of cathartics and the judicious direction of bleeding. Dangerous operations were rarely advisable in advanced age, as old persons are seldom exempt from constitutional disorders.

Dr. Charles Caldwell in 1846 delivered a lecture before his class in the Medical Department of the University of Louisville. On the request of the class, this lecture was published in pamphlet form and entitled, "Thoughts on the Effects of Age on the



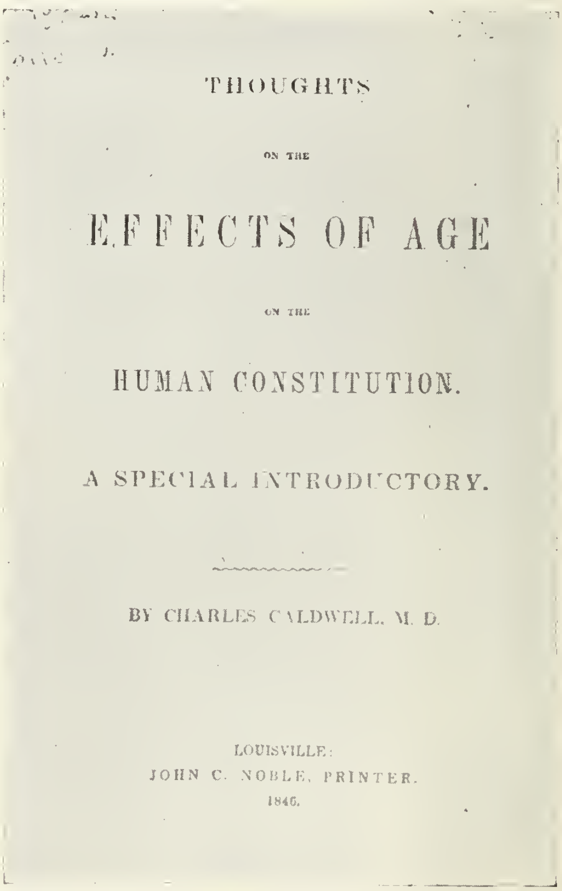
AN
ESSAY
ON THE
DISORDERS OF OLD AGE.
AND ON
THE MEANS FOR PROLONGING
HUMAN LIFE.

BY ANTHONY CARLISLE, F.R.S. F.S.A. F.L.S.
SURGEON EXTRAORDINARY TO HIS ROYAL HIGHNESS THE PRINCE REGENT,
AND TO HIS ROYAL HIGHNESS THE DUKE OF GLOUCESTER,
PROFESSOR OF ANATOMY TO THE ROYAL ACADEMY,
PROFESSOR OF SURGERY AND ANATOMY TO THE ROYAL COLLEGE OF
SURGEONS OF LONDON,
AND SURGEON TO THE WESTMINSTER HOSPITAL.

"Every stage of human life except the last, is marked out by certain and defined limits: Old Age alone has no precise and determinate boundary."
Cicero on Old Age.

PHILADELPHIA
PUBLISHED BY EDWARD EARLE
Corner of Fourth & Library Street
1819.

Plate 1. Title page of Anthony Carlisle's "An Essay on the Disorders of Old Age."



THOUGHTS
ON THE
EFFECTS OF AGE
ON THE
HUMAN CONSTITUTION.

A SPECIAL INTRODUCTORY.

BY CHARLES CALDWELL, M. D.

LOUISVILLE:
JOHN C. NOBLE, PRINTER.
1846.

Plate 2. Title page of Charles Caldwell's "Thoughts on the Effects of Age on the Human Constitution."

Human Constitution[2]." Typical of Dr. Caldwell's lectures, this pamphlet reached the highest pitch of eloquence, but if one is able to separate the chaff from the grain, it all boils down to his recommendation of three observances: Strict temperance in all things, especially diet and drink, moderate exercise in the open air, and mental alertness.

The most important work to follow was by G. E. Day[6], who published an excellent monograph which foreshadowed the modern works to come. His discussions of the diseases of the aged were modern for their day.

By the middle of the 19th century geriatrics became a scientific study. Gradually facts were being accumulated which when combined with the vast experiences of J. M. Charcot and rounded out with the lectures of Alfred Loomis gave to the study of the aged its high perspective. The experiences of these two men were published in 1881 under the title, ". . . Diseases of Old Age[4]." Probably it can be said that with this work the early period of the study of geriatrics closed, and from then on the separation of speculative philosophy and physiology was completed. With the recognition of a type-physiology for this period of life the era ended for the traditionl school of the furred tongue, cloudy urine, and diet fads.

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WHAT IS DYSPNEA?

SYDNEY JACOBS, M. D.†
NEW ORLEANS

Dyspnea means literally difficult breathing. According to Meakins[1], it is "the consciousness of the necessity of increased respiratory effort." It varies from the simple shortness on breath on strenuous exertion to the panting and persistent orthopnea of mitral stenosis in its latest stages. Dyspnea should be distinguished from hyperpnea which means an increase in the quantity of air breathed (increased minute volume) without any subjective feeling of distress. A person is said to be dyspneic whenever his respirations cannot be carried out easily and practically unconsciously; that is, he cannot draw in enough oxygen or expel sufficient carbon dioxide, or both handicaps exist. In a general sort of way, it is true that the greater his vital capacity, the less will be his tendency for dyspnea to develop for any given effort. A better correlation exists between his breathing capacity and the ratio of functional residual air to lung capacity. Normally the functional residual air (which is the amount of air left in the lungs after a normal expiration) should not be more than 35 per cent of the total pulmonary capacity; when it exceeds this value, impairment of alveolar ventilation exists. The higher this percentage becomes, the greater will be the tendency to dyspnea.

CLINICAL STATES IN WHICH DYSPNEA IS OBSERVED

Many different classifications for states of dyspnea have been proposed. One of the most useful to illustrate the mechanisms entailed in the production of dyspnea is that of Meakins[1] given below.

1. Diverse pulmonary diseases with either obstruction to the respiratory ventilation, diminished alveolar air space or decreased pulmonary vascular circulation.

2. Oxygen deprivation resulting from circulatory deficiencies, anemia and high altitude.

3. Interference with the respiratory ef-

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†From the Department of Medicine, Tulane University School of Medicine.

fort resulting from altered intercostal or diaphragmatic action.

4. Acidosis secondary to metabolic disturbances as exercise, hyperthyroidism, diabetes, nephritis and hyperinsulinism.

5. Organic neurologic lesions near the respiratory center.

6. Neuroses.

I. DIVERSE PULMONARY DISEASES IN WHICH THERE IS EITHER OBSTRUCTION TO THE RESPIRATORY VENTILATION, DIMINISHED ALVEOLAR AIR SPACE OR DECREASED PULMONARY VASCULAR CIRCULATION.

A. Obstructive dyspnea[2] may be caused by lesions in the upper air passages such as: (1) swelling of the mucous membranes due to infection or irritation; (2) tumors; (3) enlarged glands or aneurysms; and (4) foreign bodies. Obstruction of the larynx and trachea produces stridor with up and down movements of the larynx, sucking in of the supraclavicular and infraclavicular spaces and of the lower intercostal spaces. There is a pronounced indrawing of the epigastrium. Accompanying this, there is pulsus paradoxus in which the size of the pulse diminishes almost to complete disappearance during inspiration. As a rule, it is not difficult to detect this form of obstruction of the respiratory passages, but there may be great difficulty in localizing it. Laryngoscopic and bronchoscopic examinations are essential to decide whether the obstruction is from within by a foreign body or by acute laryngeal paralysis or whether it is caused from without by postpharyngeal abscess, enlarged thyroid or enlarged lymph nodes of the neck.

In bronchial asthma, constriction of the circular muscles of the smaller bronchi decreases the lumen and impedes the ingress and egress of air; edema of the mucosa and tenacious mucus further occlude the lumen. The dyspnea arises primarily from the respiratory effort involved; at first the increased pulmonary ventilation is due to the stimulation through proprioceptive reflexes in the lungs and secondarily to the anoxic anoxia. Because of the tremendous effort required to permit air to flow through the constricted orifices, there is marked elevation of the negative intrapleural pressure on inspiration.

There are times when it is very difficult to differentiate between the dyspnea of bronchial asthma and that of cardiac failure. Two tests[3] are of great value for this purpose. In the presence of dyspnea with a normal venous pressure (not over 10 cm. water) and with a normal circulation time (9-16 seconds), one is justified in excluding cardiac failure as the probable cause for the dyspnea. If the circulation time is prolonged and the venous pressure elevated, the dyspnea is most probably due to cardiac failure and not to uncomplicated bronchial asthma.

B. Pulmonary emphysema is a disease[4] in whic progressive distention of the alveoli takes place with rupture of the pulmonary membranes and the formation of enlarged air spaces of greater or lesser degree. The loss of pulmonary elasticity prevents the lungs from recoiling passively in expiration, and therefore muscular effort is needed to exhale. At the end of inspiration, the intrapleural pressure is almost atmospheric, and this further retards the expiratory ascent of the diaphragm. The overdistended lung flattens the diaphragm and keeps the lung in a state of "constant inspiration" thereby preventing the lungs from filling adequately when the patient breathes. The destruction of pulmonary membrane reduces the amount of lung available for absorption of air and contributes to the degree of arterial anoxia. The carbon dioxide content of the blood is elevated, and therefore inhalations of carbon dioxide do not stimulate respirations.

C. Distention or deflation of a lung stimulates vagal reflexes. These reflexes inhibit the respiratory center to end respiration either in inspiration or expiration as the case may be. Inflammation or edema of the lung make these vagal endings more sensitive so that they terminate the act of respiration quicker and thereby make breathing more rapid and shallow. This is a great disadvantage to the cardiac patient because it makes him breathe in and out chiefly the air which represents dead space.

II. OXYGEN DEPRIVATION RESULTING FROM CIRCULATORY DEFICIENCIES, ANEMIA AND HIGH ALTITUDES.

A. Cardiac dyspnea results from pulmonary engorgement leading to reduced distensibility of the lung, as in cardiac failure. While the lack of oxygen stimulates the aortic and carotid bodies, and an excess of carbon dioxide does stimulate the respiratory center, unless there is cardiac failure, these factors do not cause dyspnea of themselves. When there is cardiac failure, the lung is stiffened so that more muscular effort is required to distend it in inspiration. Expiration, instead of being a passive act, now becomes an active motion requiring an expenditure of a considerable muscular energy. The intrapleural pressure becomes positive at the end of expiration instead of remaining negative; therefore the dyspnea and diminishing vital capacity are due to the same cause. The lessened distensibility of the lung increases the sensibility of the Hering-Breuer reflex and this makes breathing shallow. It is entirely possible that morphine is beneficial in relieving the dyspnea of cardiac failure because it diminishes the sensitivity of the vagal nerve endings. The heart fails when the ventricles cannot receive and forward into the arteries enough blood to equal pressure in the great veins. As the systolic output falls and the diastolic volume increases, the minute output falls accordingly. In an effort to overcome this, the venous pressure rises constantly to force enough blood into the heart to keep the minute output adequate. This increase in the venous pressure, both systemic and pulmonic, impedes the venous flow and leads to distention of the tissues. In stiffening the lungs, it prevents reabsorption of fluids and promotes the establishment of pulmonary edema. All forms of cardiac dyspnea are therefore caused by increased venous pressure needed to attempt to make the failing heart put out an adequate amount of blood for peripheral circulation. The lungs, therefore, because of engorgement and stiffening, become inelastic; there is a fall in tidal air and vital capacity. The elastic fibers of the lung are stretched even on full expiration, and this lessens the negative intrapleural pressure to the point where it becomes positive. Since there is no storage of energy in the pulmonary elasticity (as happens normally) there is no "recoil" to make the lungs deflate during expiration. Therefore expiration becomes an active instead of a passive act. This naturally increases the amount of muscular effort needed during breathing and furthers the dyspnea. "He is short of breath because breathing itself is such hard work" (Dock).

B. Anemia also causes dyspnea. The dyspnea does not appear when the subject is at rest but does appear as soon as he begins to exercise. The explanation is simple. Despite the fact that the amount of hemoglobin is reduced in the blood and therefore there is less of it to carry oxygen to the tissues, enough oxygen is delivered to the tissues at rest because the hemoglobin is fully oxygenated while passing through the lung. In anemia, the cardiac output is increased and therefore oxygen is delivered to the tissues at a pressure greater than normal. When he starts to exercise, there is an increased demand for oxygen which cannot be met by compensatory factors; so he becomes dyspneic on exertion. This oxygen want stimulates the carotid body and hyperpnea results. When the hyperpnea reaches the dyspneic point, the patient becomes short of breath.

C. Another form of dyspnea[5] associated with dizziness and precordial distress is seen whenever there are large varicose veins of the lower extremities in which blood may be pooled. When the subject assumes the erect posture, there is a strain on the circulation and as much as 500 c. c. blood may be pooled in the lower extremities. This decreases the venous return to the heart, lessens the filling and consequently the cardiac output when the person is standing. Under these circumstances, a fall in blood pressure may be accomplished by the pressure sensitive areas of the carotid sinus and aortic arch and also by a compensatory contraction of the blood vessels of the abdominal viscera. The cardiac index (cardiac output per square meter of body surface) and stroke volume (amount of blood ejected with each systole) are higher than normal when such persons are recumbent because of the greater blood volume. When tilted so that the varicose veins fill, their cardiac output falls four times as much as normal, and the systolic blood pressure is lowered. This may be analogous to the situation where a man with a pendulous abdomen is relieved of his dyspnea and anginal pains by wearing an abdominal belt. After successful treatment of the varicose veins, the cardiac output is lowered with consequent relief of dyspnea and fatigue.

D. High Altitudes.

III. INTERFERENCE WITH THE RESPIRATORY EFFORT RESULTING FROM ALTERED INTERCOSTAL OR DIAPHRAGMATIC ACTION.

Abdominal distention (ascites, tumor) is characteristically associated with marked shortness of breath. This is an obvious cause of dyspnea and seldom occasions any diagnostic difficulties. The same statement may be made for crushing injuries of the chest or the operation of phrenic nerve interruption, both of which markedly restrict the normal thoracic motions. A more recently reported[6] manifestation of faulty diaphragmatic action is reputed to be the most common respiratory disorder seen in the British Army. Apparently some soldiers can endure the rigors of military training up to a certain extent beyond which they become hopelessly dyspneic. This is not due to fear, emotional disturbance or to malingering because all these factors have been successfully eliminated by thorough psychiatric investigation; it is not due to any lack of determination on the part of the individual soldier because no amount of perseverance will improve his "wind." On physical examination, the only pertinent findings are diminution of breath sounds at the bases together with diminished or absent expansion of the abdomen on full inspiration. The diagnosis is really made on the fluoroscopic examination during the course of which the diaphragmatic excursions are found to be slight, absent or paradoxical. The treatment consists of full breathing exercises. It is possible to arrange a mirror at an angle in front of the fluoroscopic screen so that the men may see their own diaphragmatic action and in this way can be trained to observe how deep breathing will restore them to full duty.

IV. ACIDOSIS SECONDARY TO METABOLIC DISTURBANCES AS EXERCISE, DIABETES, NEPHRITIS, HYPERTHYROIDISM AND HYPERINSULINISM.

Acidosis also causes dyspnea. Pulmonary ventilation resists the elevation of hydrogen ion concentration by blowing off carbon dixodie. When this no longer happens, the respiratory center is stimulated from reflexes initiated from chemoreceptors of the carotid and aortic bodies. The "alkali reserve" must drop to 12 volumes per cent before dyspnea supervenes. In the milder grades of acidosis, dyspnea occurs only upon exercise and not when the subject is at rest. When acid accumulates or base is lost from the body, reflexes are stimulated through the carotid body and sinus, and respiration is increased. This reduces the carbon dioxide tension of the alveoli and of the blood and maintains a normal alkalinity of the blood. When respiration is impaired, to a certain extent acids can be excreted through the kidney; after this fails, the body goes into acidosis unless oxygen is administered to increase the oxygen tension of the alveoli and of the blood. Non-chemical reflexes (cold, pain, emotion) may stimulate the respiratory center whenever there is any unusual demand for oxygen.

Increased metabolism also causes dyspnea. The normal person will become dyspneic after exercise greater than he is accustomed to performing. When pulmonary ventilation is more than five times the normal, the dyspneic point is reached. A trained athlete does not become dyspneic as easily as does an untrained person because he can tolerate the increased circulation rate of exercise; in addition, his neuromuscular coordination is superior and is not so easily disturbed; and finally, his vital capacity is better. In hyperthyroidism the dyspneic point is lower than normal. The person is literally exercising while at rest so that any additional amount of exercise will produce dyspnea.

V. NEUROSES

Not infrequently, a patient will complain of breathlessness or of shortness of breath on moderate exertion, but no physical cause for his dyspnea can be ascertained. It is well under such circumstances to consider a psychic basis for his symptoms. What has been termed "sighing dyspnea" is a frequent complaint of psychoneurotics. As Maytum[7] pointed out, sighing is a normal response to fatigue or to mild emotional states. Under the influence of emotional strain, a patient will complain of being unable to draw a deep breath or of being dissatisfied with his breathing capacity. Haldane observed that anoxemia and fatigue of the respiratory center cause a sensation of constriction of the chest with difficulty in satisfactorily filling the chest. It is possible that the deep inspiratory efforts of the depressed patient induce a temporary anoxia which is perpetuated by efforts to correct the original defect. The diagnosis is seldom difficult if the condition is borne in mind; invariably there are other evidences of a psychoneurosis.

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THIOURACIL IN THYROTOXICOSIS

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and
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New Orleans

Thyrotoxicosis has definitely defied our therapeutic armamentarium. Rest, iodionization, roentgen therapy and the various surgical measures are offered; subtotal thyroidectomy on the properly prepared patient is considered the most satisfactory management. Of course, mention should be made of quinine hydrobromide, di-iodotyrosine, the ergot alkaloids, prostigmine bromide, calcium and the estrogens; there is much to be considered in the pre- and postoperative management as well as the many anesthetic and technical factors. Yet, regardless of the cooperativeness of internist, roentgen therapist and surgeon, the end result is often most unsatisfactory. There is no point in a review of various post surgical difficulties which as immediate, delayed or remote, occur for various reasons beyond the control of the internist and surgeon; Jackson[23] numerically lists 28 surgical complications. The inadequacy of our competency to manage hyperthyroidism is indicated by the enthusiastic reception of thiouracil (2-thio-6- oxyprimidine). A review of recent publications on therapeutic research reveals thiouracil runs second in prominence only because penicillin is its competitor.

The history of thiouracil has been repeatedly reviewed; Williams'[24] historical summarization is most complete. Briefly, suppression of thyroid activity in experimental animals by sulfonamide,[1, 2] thiocarbamide[3] and thiourea[4] compounds led to clinical confirmatory[5, 6, 7, 8, 9, 10] reports. In 1943 there were the simultaneous reports of Astwood[16] and the Mackenzies; now already the bibliography is too lengthy for routine publication. At this time 2-thiouracil is the most effective of a survey of more than one hundred compounds by Astwood, but continued research may soon produce a more effective and even less toxic preparation.

Adequate histologic studies on experimental animals agree closely with surgically removed human thyroids[10, 11] controlled by biopsy prior to instituting thiouracil therapy. The expected response is marked hyperplasia[2, 4] in excess of the hyperplasia of hyperthyroidism with concomitant reduction in colloid content. The physiologic explanation experimentally determines this goitrogenous action to result from prevention of thyroxine synthesis in the thyroid. Failure in thyroxine production leaves uninhibited the anterior[1, 16] pituitary producing thyrotrophic hormone[17] with a resultant hyperplastic but hypofunctioning thyroid. Dempsey[18] suggests thiouracil neutralizes peroxidase, the enzyme necessary for the conversion of diodotyrosine to thyroxine.

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Thiouracil therefore does not neutralize preformed hormone. Beardwood[21] gives an adequate clinical abstract of the physiologic investigations with illustrative theorization.

ADMINISTRATION

Thiouracil is rapidly absorbed (within two hours) and excreted[15] and therefore is satisfactorily given orally; it has no odor but a definitely bitter taste. There is no advantage to the intravenous sodium salt, for despite the fact that 15 per cent of the orally administered drug is destroyed in the gastrointestinal tract, an effective blood level is obtained and maintained by frequent small doses orally with distribution throughout essentially all of the tissues and fluids of the body. There is no evidence of cumulative action even in individuals with renal or hepatic insufficiency. Dosage has varied greatly in the publications.

Williams and his collaborators[15] substantiate the need for only frequent small doses, no one has proved advantage to large doses. We have used 0.1 gm. to 0.2 gm. at five fixed intervals daily, reducing this gradually to a maintenance done of 0.1 gm. three times a day when normal basal metabolic readings are obtained. For subsequent maintenance 0.05 gm. twice daily is given after six weeks of clinical control of thyrotoxicosis. Williams[24] more recently advocates an average dosage of 0.6 gm. daily at onset. It has also been shown[19] that concomitant iodine administration in guinea pigs results in greater concentration of thiouracil in the thyroid while concomitant thyrotrophic hormone administration decreases thyroid thiouracil deposition. This has led us and others to use iodides concomitantly or intermittently with thiouracil to enhance its action and at the same time hoping to reverse some of the hyperplastic changes. We state this realizing Astwood and the Mackenzies showed enhancement of hyperplasia by concomitant administration in experimental rats.

We have kept our patients continuously on 0.1 gm. of thiouracil daily, whenever possible, for six months or longer after clinical remission and then individualized the case to give either iodine or thyroid extract (or thyroxine) intermittently.

As a general rule, judging from detailed reports, clinically and experimentally, most instances will show recurrent hyperthyroidism, at varying intervals, after cessation of thiouracil administration. It is therefore indicated that a small dose of thiouracil be continued until the endocrine imbalance has been rectified.

It has been suggested by some investigators that as a final measure roentgen therapy should be used to close the issue. Grollman and Gryte[22] have had fortunate results occasionally applying x-ray exposure.

TOXICITY

Toxicity is admitted. These undesirable side effects have not been sufficient to nullify any of the enthusiasm of investigators but should be appreciated in the realization of the danger and in stimulation for research production of a less toxic product.

Besides these toxic factors one must be cognizant of the fact that when a foreign chemical is used to control or abort physiologic endocrinous function involving the thyroid, anterior pituitary and possibly the adrenal cortex there may be yet unrecognized contraindications to the continuance of this therapy. Changes approaching myxedema may be considered an untoward effect.

Transient nausea,[13 14] a sweet odor to the breath (more with thiourea) and the inconstant transient elevation in non-protein nitrogen are not of importance. Less significant untoward effects such as nonhematologic oral infections and mild "drug fever"[7] may warn one to proceed with caution. Arthralgia[14] lymphadenopthy, generalized edema[14] without evidence of renal involvement, periorbital edema with lacrimation[21] and the dermatidies[14] (maculopapular and morbilliform) including urticaria, probably indicate an allergic idiosyncrasy. All of the above have responded without therapy on discontinuance of thiouracil and are held to be relatively insignificant. Williams and Clute[14] report continuing thiouracil despite a morbilliform rash in four cases and observed the dermatitis to subside; similar experience has been reported by others. Beardwood and Levison[21] report a single incident of hoarseness and impaired motion of the right vocal cord associated with increased thyroidmegaly; both were transient.

Probably of more severe foreboding, despite the disregard of some researches, are:

1. *Hepatitis*: This has been infrequent, no mortality has been reported; it may be allergic, toxic, or actually a part of the thyrotoxicosis. Withdrawal or active hepatic protection is indicated. Accurate hepatic studies are reported indicating cellular damage.

2. *Hemopoietic disturbances*: These have attracted the most prominence but seemingly do not carry a severe prognosis.

a. Leukopenia[14] is usually mild and transient.

b. Agranulocytosis[4, 12, 14] is relatively rare but considered the most dangerous reaction; immediate withdrawal, pentnucleotide and parenteral liver extract are advocated.

c. Anemia: three of our cases showed a hypochromic microcytic anemia; one such instance suggested an early aplastic anemia but no marrow studies were made and the response to hematinics was prompt.

CLINICAL EVALUATION

The effectiveness of thiouracil therapy is generally measured by:

1. General clinical improvement:

a. Weight gain.

b. Return of blood pressure and pulse rate to normal limits.

c. Subsidence of vasomotor extremes; tremor, swearing, emotional instability, diarrhea.

d. Return of strength and resistance to fatigue.

e. Improved tolerance for heat.

2. Laboratory evaluation:

d. Return of strength and increased resistance to fatigue.

b. Serum cholesterol values of normal reading. (Other laboratory studies are too variable to be of value.)

In general, clinical improvement parallels the drop in metabolic rate but, as has been experienced with thyrotoxicosis managed surgically, the entire physiologic state does not return to "normal" as promptly.

All of our patients showed some weight gain although there was considerable variability. Vasomotor phenomena responded slowly but definitely and contrasted well with what one expects in the well managed thyroidectomized patient. Return of strength and resistance to fatigue were not notable, most of our patients persisted in complaints of languidity when the result was otherwise notable and a sense of well being was otherwise appreciable.

Comparative to the statistics of Rawson[10] and others, response of the basal metabolism was uniformly satisfactory with the expected delay due to previous lugolization. In most instances the response in our cases was more delayed than in other reports to date. We did not find, however, the tendency toward myxedematous curves reported by others and this is possibly due to the fact that all of our patients were previously and concomitantly lugolized. We are therefore adhering to a program of prethiouracil lugolization and individualize some cases for continued or intermittent concomitant iodide administration. Occasionally thyroid was used to combat manifestations suggestive of a progression toward myxedema. Iodine administration may be rationalized by theorizing that hyperplasia indicates a deficiency possibly of iodine as substantiated by Marine's animal experimentation.

MANAGEMENT OF TRIAL CASES

Our routine required removal of all sedation and a ten-day abstinence from iodides. No measures were initiated until a satis-

Case Sex Age	Type	Duration Disease	B.M.R.				Initial Dose Thiouracil	Interval Before Response	Maintenance Dose Thiouracil	Duration Observation	Cholesterol		Toxicity	Result
			Initial	3 mos	6 mos	12 mos					Initial	Final		
V.J.M M 46	Masked	24 mos	+40	+17	-12	-26	2 Gms Daily	20 wks	0.1 Gm. Daily	12 mos	110		?Asthenia	Excellent
D M G F 31	Diffuse	3 wks	+27	+6	-7	+3	1 Gm Daily	1 wk.	0.1 Gm Daily	14 mos	138	225	Nausea Fever	Excellent
E.P S F 29	Diffuse	9 wks	+33	+30	+24	+38	2 Gms Daily	–	0.3 Gm Daily	12 mos	112	130	Anemia Neutropenia	Poor
J O M. M 30	Diffuse	3 wks	+27	+23	+12	+9	2 Gms Daily	4 mos.	0.3 Gm. Daily	12 mos.	100	230	None	Fair
J.M R M 26	Nodular	4 mos	+38	+2	-6	-2	2 Gms Daily	6 wks	0.1 Gm. Daily	14 mos	125	235	None	Excellent
E E I M 24	Nodular	3 mos	+33	+6	-12	-8	1 Gm Daily	2 wks	0.1 Gm Daily	12 mos	170	210	None	Excellent
J H M M 46	Masked	6 mos	+52	+12	+2	+4	2 Gms Daily	4 mos	0.1 Gm Daily	12 mos	—	240	None	Excellent
W J K F 28	Nodular	3 mos	+22	+2	+6	-8	1 Gm Daily	2 wks	0 1 Gm Daily	10 mos	162	210	None	Excellent
G G R M 58	Diffuse	6 mos	+28	+6	-8	—	2 Gms Daily	6 wks	0.1 Gm Daily	11 mos	–	–	None	Excellent
O C B M 28	Nodular	2 mos	+16	-2	-8	-12	1 Gm Daily	1 wk	0.1 Gm Daily	12 mos	158	225	None	Excellent
J.T.L. M 42	Nodular	8 mos.	+42	+8	+6	+6	2 Gms Daily	8 wks.	0.1 Gm Daily	10 mos	136	210	None	Excellent
L.M.B F 48	Nodular	14 mos	+68	+33	+18	+4	2 Gms Daily	7 mos.	0.3 Gm Daily	14 mos	108	238	Nausea Anemia Fever	Satisfactory
R.D.E. M 22	Masked	6 mos.	+28	+2	-6	-8	1 Gm. Daily	2 wks.	0.1 Gm Daily	12 mos.	—	265	None	Excellent
J.R.R M 41	Nodular	2 yrs	+40	-20	–	–	2 Gm Daily	3 wks	0.1 Gm Daily	3 mos.	160	—	Fever Anemia	Reserved For Further Observation
T.F.M. M 29	Diffuse	2 mos	+18	+7	+6	–	1 Gm Daily	3 wks	0 1 Gm Daily	9 mos	180	-	None	Reserved For Further Observation
F T.G. F 26	Diffuse	2 yrs	+16	+8	+7	—	1 Gm. Daily	6 wks	0.1 Gm Daily	9 mos	—	—	None	Reserved For Further Observation
E J R M 39	Masked	18 mos.	+27	+12	-8	—	1 Gm. Daily	4 mos	0.1 Gm Daily	9 mos	170	—	Fever	Reserved For Further Observation
D A R M 26	Masked	3 mos	+33	-8	–	–	1 Gm Daily	1 wk	0.1 Gm Daily	4 mos	162	-	None	"
G.S.B M 42	Nodular	6 mos	+22	+2	–	–	1 Gm Daily	2 wks.	0.1 Gm Daily	4 mos	176	—	Nausea Fever	"
E.L.L M 16	Nodular	2 mos	+18	-6	-	-	1 Gm. Daily	1 wk.	0.1 Gm Daily	4 mos	158	-	None	.

factory baseline in basal metabolic rate had been obtained. An abnormal galactose tolerance test was prerequisite.

1. A dietary regime of 3500 calories contained a minimum of 100 grams of protein and attempted to attain 500 grams of carbohydrate.
2. Rest to the extent of ten hours' bed rest at night supplemented by two hours in interval rest during the day was suggested. None of our patients were hospitalized because of the prolonged period of observation on the drug.
3. Thiouracil was administered as previously stated. The initial does of 1 gram, or at most 2 grams daily was contin-

ued until improvement was substantiated, then gradually reduced to a maintenance minimum of 0.1 gram daily which can probably be continued indefintely judging from the absence of side effects in properly observed reports appearing in the literature and from our own findings.

4. Periodic hematologic studies must be insisted upon and it is probably wise to do bi-weekly blood surveys.

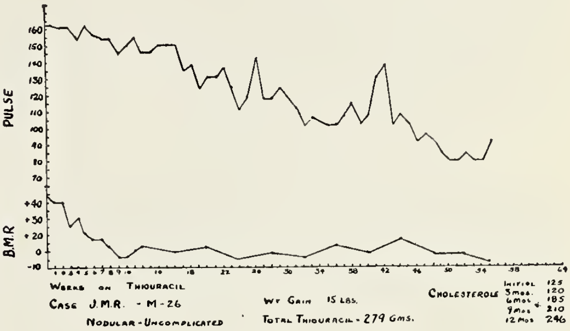
5. If practical, a basal metabolism should be done as outlined in our illustrative charted cases.

CLINICAL APPLICATION

Astwood[20] demonstrated the effectiveness of thiouracil in lowering the basal metabolic rate and producing clinical remission. This has been confirmed in numerous clinical[8,14,2] studies with satisfactory response. The time necessary to return the basal metabolic rate to normal has varied greatly, that is, from one week to six months with the general conclusion that pre-iodinization delays the thiouracil response. Possibly unusual storage of preformed hormone may also play a part in such delayed response.

Continuously administered, thiouracil has produced clinical myxedema.[6] This effect is reversible by discontinuance of the drug and administration of thyroxine or thyroid extract. It is conceivable that by intermittent administration with thyroid and even combined with iodinization we may conceivably produce atrophic changes or, at least, carry the patient through toxicity into an adjusted endocrine period and thereby actually achieve a medical thyroidectomy. Astwood[4] apparently has such an ambition for thiouracil. Most contributors have ameliorated their reports with surgery for selected cases. Many limit thiouracil to a preoperative measure. Clinical reports are extensive and there is accumulating a sizable study for evaluation which will bring conclusions of note when sufficient time permits accurate evaluation.

Assuming the attitude that many instances of thyrotoxicosis may be managed medically, we, as have others, have been guilty in the past of permitting an occasional patient to become "iodine fast." To this time there are no reports of "thiouracil fast" instances. With this reassurance we have selected our group of mild thyrotoxics and attempted medical thyroidectomy. Our results are charted.

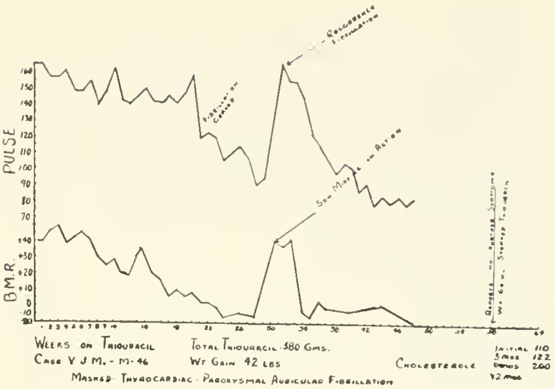


METABOLIC STUDIES

As would be expected, the blood cholesterol responds in a reverse relationship to change in the basal metabolism. Most complete studies have confirmed this. Beardwood and Levinson[21] found this uniformly; they reported a group of cases with periorbital edema associated with high cholesterol values. These authors also depicted the response in galactose tolerance and creatinine metabolism but indicate the lack of specificity of galactose tolerance as a diagnostic test in hyperthyroidism.

In our study, however, as an aid to accuracy in diagnosis we required a definitely positive galactose tolerance, blood cholesterol below 180 mgm., in addition to a pathologic, clinical and basal metabolic evaluation. The galactose tolerance was not repeated at the end of observation; in those on whom the blood cholecterol was checked it was confirmatory of the therapeutic efficacy of the drug.

We present charts of two patients which show their response to thiouracil. Prior to the use of this drug we would have previously definitely elected surgical interference.



CONCLUSIONS

1. It is substantially proved and in agreement with our observation that thiouracil reduces the basal metabolic rate elevation attributable to thyrotoxicosis and concomitantly brings clinical improvement by virtue of inhibition of hormone production by the thyroid.

2. The toxicity of thiourea was reported to be of high incidence,[2] thiouracil appears safer and of equal or greater therapeutic effectiveness. Newer products will likely improve therapeutic efficiency with minimal toxicity. As yet, the toxicity of thiouracil certainly does not nullify its value in therapeusis.

3. The advantage of thiouracil is that possibly we may suppress thyroid activity and yet expect reversibility and in so doing control thyrotoxicosis more effectively than by subtotal thyroidectomy with its inherent dangers of myxedema, residual or recurrent thyrotoxicosis plus surgical risk.

4. Unlike most authors we have had instances of failure of response to thiouracil after adequate observation. We have no explanation for this lack of response.

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PLASMOCHIN INTOXICATION

REPORT OF A CASE

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NEW ORLEANS

Plasmochin, a quinoline derivative, was synthesized by Schulemann, Schoenhoefer and Wingler[1] through alteration of the structure of methylene blue, the antimalarial properties of which were already recognized by Ehrlich in 1891. This specific and highly potent antimalarial exerts a destructive action on the schizonts and merozoites of *P. vivax* and *P. malariae* but not on those of *P. falciparum;* it will destroy gametocytes of all three species and even in minimal doses renders them non-infectious for mosquitoes. Plasmochin should not be relied upon to cure any malarial infection but should be used along with quinine or atabrine for its effect on gametocytes.[2] Although systematic administration of plasmochin to carriers of tropical malaria should promote eradication of this disease through extermination of sexual forms, its high toxicity necessitates constant medical supervision and therefore restricts it as a form of malarial control.

The toxicity of plasmochin is unaltered when combination therapy with quinine is employed[3] but appears to be enhanced by simultaneous administration of atabrine. Decherd[4] observed a fatal reaction in a patient who received 0.6 gram atabrine and 0.03 gram plasmochin daily for two days. When combination therapy is employed, the course of plasmochin may be given following atabrine therapy with or without a rest period.[5] Most workers allow an interval of several days to elapse so that atabrine levels of the blood may fall to inconspicuous values before institution of plasmochin treatment. Walker[6] has suggested simply examining the urine in the sunlight; absence of atabrine coloration is a safe indication for administration of plasmochin. Mann and Smith[7] recorded a case of intense hemoglobinuria occurring when a three-day period was permitted to elapse between completion of a course of atabrine and initiation of plasmochin therapy in doses of 0.01 gram three times a day for four days. Sein[8] reported appearance of hemoglobinuria in a patient after administration of 0.04 gram plasmochin alone daily for six days. Dosage levels of 0.06 and 0.04 gram a day are associated with toxic manifestations in about 15 per cent of cases.[9] Craig and Faust[2] recommend 0.01 gram three times a day for five or six days.

REPORT OF CASE

G. K., a 32 year old white Greek sailor who had just returned from Central America, entered Touro Infirmary on January 17, 1945, complaining of frontal headache, generalized body pain and high fever for about one week. There were no chills. The patient was well developed and well nourished but apparently acutely ill; he was lethargic and at times incoherent. Aside from a temperature of 101.8°F., a pulse rate of 110, moderate dehydration, and questionable jaundice, the physical observations were within normal limits.

Blood count showed 3,350,000 red blood cells, 4,600 white cells with 66 per cent neutrophils, 32 per cent lymphocytes, and 2 per cent eosinophils. Hemoglobin was 68 per cent and icterus index 12. The blood film showed ring forms of *Plasmodium falciparum.* Results of urinalysis, serologic test, and agglutination reactions were all normal.

Atabrine was administered in doses of 0.1 gram three times a day for five days. The temperature dropped to normal on the second day following initiation of treatment. By error, plasmochin therapy was instituted the day after completion of the course of atabrine; a dose of 0.08 gram was given every six hours for four doses (total of 0.32 gram plasmochin in 24 hours). The patient was feeling well when discharged by the Immigration Department on January 24, 1945, before the error was recognized. Twenty-four hours later he noted nausea, vomiting, moderate upper abdominal discomfort, and presence of "black urine." The following day he had a severe chill; nausea, vomiting, and abdominal pain persisted.

When re-admitted to Touro Infirmary 48 hours after his previous discharge (January 26, 1945), the patient was in collapse. The skin felt cold and clammy and was a yellowish, muddy color. There was obvious pallor. The mucous membranes were moderately cyanosed, and the sclerae were yellow. Blood pressure was 96/60, the pulse rate 100, the pulse volume poor but the rhythm regular. His temperature was now 96.8°F. The patient complained of intense fatigue and appeared extremely lethargic. The only other significant physical observation was severe dehydration.

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Blood count at this time revealed a hemoglobin of 32 per cent, 1.4 million red blood cells, 6,600 white cells with 60 per cent neutrophils, 29 per cent lymphocytes, 9 per cent monocytes, and 2 per cent eosinophils. Thick smears were negative for malarial parasites. NPN was 90 mg. per cent, blood sugar 89 mg. per cent, and the icterus index could not be done because of intense pigmentation of the serum. The van den Bergh reaction showed 0.92 mg. per cent bilirubin, with 58 per cent in the "direct-reacting" form. A qualitative methemoglobin determination indicated the presence of this compound. The urine was acid and chocolate colored with a specific gravity of 1.028; a few pus cells and three to four granular casts per HPF were seen. No bilirubin could be detected in the urine, but copious amounts of hemoglobin were present.

Therapy consisted of intravenous administration of 10 per cent glucose solution in daily amounts of 2000 c. c., supplemented by oral administration of sufficient fluid to maintain the urine output at 3000 c. c. every 24 hours. The urine was alkalinized with sodium bicarbonate in quantities sufficient to maintain an alkaline urine reaction. In the first twelve hours 1500 c. c. of whole blood were transfused and on the following day an additional 500 c. c. Choline was given in doses of 0.5 gram three times a day.

The patient responded to treatment. Hemoglobinuria cleared in four days, and on the seventh day the blood count showed 3,740,000 red blood cells and 68 per cent hemoglobin. The patient felt perfectly well when discharged on February 3, 1945.

DISCUSSION

The margin of safety of plasmochin is relatively narrow, and its most striking toxic reactions are related to the erythrocytes. Cyanosis and methemoglobinemia are the commonest effects of full doses; the former usually appears first and demands immediate cessation of drug administration. Chopra and Chaudhuri[10] noticed cyanosis three days after cessation of plasmochin therapy, administered in doses of 0.05 gram daily for six days, but no other abnormalities were discovered. Molitor[11] has emphasized that following plasmochin therapy there is prompt formation of methemoglobin, produced by oxidation of reduced hemoglobin. Fischer and Rheindorf[12] reported occurrence of methemoglobinemia regularly following daily administration of 0.08 to 0.10 gram plasmochin. Cyanosis appears when methemoglobin constitutes about 10 per cent of the total blood pigment.[13]

Rapid breakdown of erythrocytes is characteristic of the picture seen in other acquired acute hemolytic anemias. Within 24 hours after administration of toxic doses, onset of acute hemolysis may coincide with disappearance of several million erythrocytes and their hemoglobin, as in the case herein reported. The serum and urine contain large quantities of hemoglobin and methemoglobin, presumably derived from the action of the drug on the hemoglobin. Hemoglobinuria occurs when the serum level exceeds 150 mg. per cent. Clinical manifestations include pallor, cyanosis, extreme weakness, dyspnea, and palpitation, associated with nausea and vomiting. Sudden contraction of the spleen caused by plasmochin often produces acute pain in the upper left quadrant.[14]

The mechanism of hemolysis is not entirely clear. It does not appear feasible that its formation can be attributed solely to plasmochin, since this drug requires a concentration of 1:5000 for its production.[3] If all plasmochin administered to the patient herein reported were freely diffusible in the body water, it may be calculated that the concentration of plasmochin was about 1:100,000. Interestingly enough, Mann and Smith[6] were able to demonstrate hemagglutinins in the serum during acute hemolytic anemia associated with plasmochin intoxication. These may possibly resemble the autoagglutinins seen in hemolytic anemia related to sulfanilamide administration.

Baker and Dodds[15] and DeGowin, Warner and Randall[16] have shown that large quantities of hemoglobin may be excreted by the kidney without impairment of renal function, provided the urine is not as acid as pH 6 or lower. Acid urines induce crystallization of hemoglobin and acid hematin in the tubules, precipitating renal failure; alkaline urines promote solubility of hemoglobin over a wide range. Therapeutic indications derived from the above observations include use of multiple transfusions to combat anemia, administration of adequate fluids to permit copious urine formation, and alkalinizing measures to preclude onset of uremia following precipitation of blood pigment in the renal tubules produced by acid urine.

Less frequent but more serious toxic effects of plasmochin on the circulatory system include reduction of blood pressure by direct action on the heart, cardiac irregularities, electrocardiographic alterations, and diastolic standstill.[11]

SUMMARY

A case of plasmochin intoxication, induced by accidental administration of ten times the therapeutic dose, is reported. Clinical recovery followed supportive therapy. The pathologic physiology and treatment are discussed.

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SULFAMERAZINE IN THE TREATMENT OF GENITO-URINARY INFECTIONS

AN ANALYSIS OF 151 CONSECUTIVE CASES

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The purpose of this report is to present the results of treatment in 151 cases of genito-urinary infections with sulfamerazine. An attempt has been made to evaluate the efficiency of the drug, and whenever other sulfonamides have been used in the same cases, a comparative study of their efficacy and relative toxicity has been made.

The chemistry of sulfamerazine [2-sulfanilamido - 4 - methyl - pyrimidine; sulfamethyldiazine)] has been described by Roblin and his co-workers[1] and by Sprague and his associates[2]. It is a white crystalline powder, poorly soluble in water and the common organic salts, but readily soluble in dilute acids and alkalis, and may be converted into its sodium salt, which is soluble in water. It has attracted interest because it is more soluble than other pyrimidine derivatives, and because it is thought to be more rapidly and completely absorbed from the gastrointestinal tract and more slowly excreted than other sulfonamides. Welch and his co-workers[3] found that sulfamerazine and its acetyl derivatives were approximately 20 per cent more soluble in both water and urine than the respective forms of sulfadiazine. Studies by Welch and his associates[3], Goodwin and his co-workers[4], Murphy et al.[5], and Clark et al.[6], demonstrated that sulfamerazine was more rapidly absorbed from the gastrointestinal tract and more slowly excreted in the urine than sulfadiazine. They showed that a single dose of sulfamerazine would bring about a higher blood level more rapidly and longer sustained than the same amount of sulfadiazine. Renal parenchymal injuries and the formation of drug concretions in the urinary tract were thought to be less likely to occur with sulfamerazine than with sulfadiazine, because of the increased solubility of both the free and conjugated forms of sulfamerazine in acid and neutral urine. It has been demonstrated that adjuvant alkali therapy aids in the prevention of renal complications due to the sulfonamides by raising the pH of the urine.[7]

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Animal experiments indicate that the toxic effects of sulfamerazine are no greater than those following the use of sulfadiazine. Among the clinical reports in the literature concerning the use of sulfamerazine, we have been unable to find any report of fatalities. Hall and Spink[8] had two non-fatal cases of urinary tract complications resulting from crystalline precipitation and obstruction to the flow of urine. Gefter and his co-workers[9] encountered six cases of dermatitis in 45 patients treated with sulfamerazine, and Clark and associates[6] reported mild cases of dermatitis in 3 per cent of his cases.

With regard to the efficiency of sulfamerazine in the genito-urinary tract, several small series have so far been reported. Anderson and associates[10], in a large series of cases, treated 10 patients with *E. coli* infections of the urinary tract with sulfamerazine. Four of these had acute pyelonephritis and all became asymptomatic rapidly following use of the drug. Three out of four cases with acute cystitis recovered promptly. Hall and Spink[8], treating 116 cases with sulfamerazine, used the drug twice in urinary tract infections due to hemolytic streptococci, and reported that both patients became free of infection. Hageman and his co-workers,[11] in a series of 103 cases, treated four patients with *E. coli* infection in the urine with satisfactory results.

In our series of 151 patients treated with sulfamerazine there were 137 cases of urinary infection, seven of gonorrheal urethritis and seven of non-specific urethritis. Of the 137 cases with urinary infection, 88 were regarded as primary, uncomplicated cases and 49 as secondary to some complicating factor precluding the possibility of radical cure. The dosage averaged 30 grains daily for ten days, the minimum being 15 grains daily for two days and the maximum 60 grains daily for thirty days. It may be noted here that in the 10 patients receiving 60 grains a day for thirty days there was no difference either in the effectiveness of the drug or in the incidence of reactions. The complicated cases of urinary infection could not be cured because of some mechanical complicating factor and were, therefore, not considered. In the 88 uncomplicated cases of urinary infection treated, the organisms encountered were bacilli alone in 47, staphylococci in 18, streptococci in three and mixed infection in 18. There were two cases involving the Proteus bacillus.

The determination of a cure in the uncomplicated cases has been evaluated on the basis of three negative stained smears of the urinary sediment at weekly intervals following withdrawal of the drug. The average time required to bring about a sterile urine in the successfully treated cases was 5.5 days and the average time that the patient was required to take the drug was 6.6 days. Of the 47 bacillary cases, 40 patients were cured (85 per cent) and seven (15 per cent) were classified as failures. In the 18 staphylococcic cases, 16 were cured (89 per cent) and in two (11 per cent) the drug had no effect. Of the 18 patients with mixed infections, 11 (61 per cent) were cured and seven (39 per cent) were failures. The two cases of Proteus bacillus infection were not affected by the drug. Only two of the seven patients with gonorrheal urethritis were cured; of the five failures, four were later promptly cured by the use of sulfathiazole in similar dosage. Of the seven non-specific cases of urethritis, two were cured and five were considered as failures.

Among the cases of urinary infections successfully treated with sulfamerazine were six who had previously failed to be cured with sulfadiazine; 10 who failed with sulfathiazole; 11 who failed with mandelic acid; three with the arsenicals; four with prohydrion, and two with sulamid. One bacillary case had been unsuccessfully treated with sulfadiazine, sulfathiazole, prohydrion and mandelic acid, and yet cleared completely on sulfamerazine.

Of our total of 151 cases, pronounced reactions were encountered in six cases (4 per cent) and slight reactions in five (3 per cent). Ten patients complained of nervousness, nine of nausea, three of fever, one of vomiting, one of dizziness, one of headache, one of microscopic hematuria, one of edema of the legs and one of numbness of the legs. There appeared to be no relationship between the total dosage received and the incidence or severity of the reactions encountered, although one patient who took 60 grains a day for four days had multiple reactions which disappeared when the dose was reduced to 15 grains. Of those patients who had experienced disagreeable reactions from other sulfa drugs, and who were then given sulfamerazine without experiencing further reactions, there were three with microscopic hematuria, one with renal colic and one with a skin rash from sulfathiazole; one with microscopic hematuria and renal colic, and one with paresthesia and mental confusion from sulfadiazine.

CONCLUSIONS

From the above report it may be seen that sulfamerazine is useful in the treatment of genito-urinary infections in several respects. It is efficient in relatively small doses and exerts its influence within a reasonably short time. It apparently shows no higher incidence of reactions than the other sulfonamides in comparable doses. It may frequently be given to patients who have reacted badly to one of the other sulfonamides with no further reaction, and it will often eliminate infections in patients who did not respond to the various other urinary antiseptics, including the other sulfonamides. It is not efficient in gonorrhea and no more efficient in the non-specific genital infections than the other sulfonamides.

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POSTOPERATIVE EVISCERATION*

PART I: A COMPARATIVE STUDY

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The belief that wound evisceration was an act of God might well have existed until 1905, when Madelung attempted to evaluate 157 cases, thirteen of which he had personally observed. Then there followed many theories and scientific studies which delved into the causes of evisceration.

The aim of this study is to compare the progress of evisceration in the past decade with its progress in the preceding decade; to ascertain whether there have been any changes in the occurrence of the disease; to determine the role of non-absorbable suture material in evisceration; to evaluate many of the so-called predisposing factors; and to find a means of early diagnosis prior to the day of evisceration or at the time of removal of skin sutures.

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*Read before the Orleans Parish Medical Society, April 9, 1945.

This is a comparison of the cases of evisceration occurring between 1934 and 1944 with those occurring between 1924 and 1934 at Charity Hospital in New Orleans.

The causes of evisceration, in so far as they are known, may be divided into two groups, those which can be attributed to the patient, and those for which the surgeon can be held accountable. The former usually include sex, age, respiratory infection, stress and strain, contamination, nutrition with special emphasis on vitamin C, and the healing power of the individual. On the other hand, the surgeon's influence on wound healing can be reflected in the following: site of the incision, tissue care, choice of suture material, knots, choice of anesthesia, use of a drain, and pre- and postoperative care. Each of these causes and topics will be considered individually.

From a study of the cases reported in the literature 119 were males and 92 were females. These findings bear out the general opinion that sex is not an important factor. However, Colp believes that males are affected more often because of their type of breathing and labor.

In considering age as related to wound healing, it is difficult to obtain any significant statistics, because evisceration presupposes an operation and operative risk often rules out the very old. Since hospital admissions average between 30 and 50 years of age, evisceration as a complication follows those same figures. Within the age groups this catastrophy runs proportionately as frequent among all groups. In general, it might be noted here that evisceration complicates 0.03 per cent of all operations according to American reporters, and 2 per cent to 3 per cent as reported by Sokolov from European clinics.

Infection of the upper respiratory tract has been shown to contribute toward evisceration by causing the patient to cough, by delaying the ingestion of food, which in turn diminishes the mineral and vitamin intake. Infection has been shown to delay fibroblastic proliferation. Before an individual is operated upon an earnest search should be made for the possible existence of any infection of the respiratory tract. If such evidence is found the infection should be dealt with prior to operation, for anesthesia aggravates existing respiratory infections and often causes such an infection when it did not previously exist.

Stress and strain, such as hiccough, cough, sneezing, cause a constant tearing at the site of the incision. This is particularly detrimental to longitudinal incisions. Ileus, whether dynamic or adynamic, causes a straining of the suture line and should be treated at once. Early activity in the past was stated as a cause of disruption. Pickrell believes that during the lag period, which has been demonstrated to exist for about four days, the patient should be kept quiet, and support applied to the abdomen so as to keep the wound edges coaptated. However, in general, this theory has fallen into discredit, witness the now plentiful literature on early mobilization after surgery, by Nelson, Zana, D'Ingianni, and others. Indeed, the advocates of early ambulation claim that it promotes rather than delays wound healing. An inspection of table 1 certainly does not reveal vomiting, cough, and hiccough as important factors in producing evisceration.

As for contamination, all non-viable tissue must be removed by debridement, for removal by leukocytes is slow, and it must be removed before the fibroblasts proliferate. When chromic sutures are used there are multiple abscesses formed. To begin with, sterilization of chromic is far from satisfactory. Add to this the fact that organisms settle out of the air during the procedure, and the stage is all set for infection. When infection is present the greater leukocytic infiltration causes rapid disintegration of the suture material.

Pus increases the amount of edema, and edema diminishes the blood supply by obstructing the blood vessels, thus interfering with healing. Syphilis is thought to be another delayer of healing, yet the number of cases of evisceration with syphilis is not significant.

DuMortier has shown that the resistance to infection of an incision is lowest during the first six hours; that thereafter it becomes progressively more difficult to infect a wound, and that after the fourth day it is impossible to do so. This period corresponds to the lag period seen in the study of wound healing.

Nutrition is an important factor in wound healing in those cases wherein there is an inability to ingest or digest a balanced diet, or when vomiting has occurred sufficiently long to dehydrate the patient and deplete the body of chlorides. Dehydration as well as edema due to hypoproteinemia or overloading of the body with sodium ions impairs healing. Proliferation of the fibroblasts is apparently influenced by the presence of fluid in tissue spaces. Edema diminishes the nutrition and oxygenation of the cell, thus devitalizing it. Edema as seen in beriberi and pellagra is of course due to vitamin deficiency and again delays healing.

Harvey and Howes have shown that high protein diet accelerates fibroblastic phenomena, and the hypoproteinemia does not prolong the lag period. Clark contends, as a result of animal experiments, that the lag period can be influenced by protein diet.

Vitamin C has been given a great deal of study in its relation to healing. Its deficiency may be caused by improper diet or by an inability to handle ingested foods as in cases of peptic ulcer and tumors of the gastrointestinal tract. Lannan and Ingall have done work in this field. Taffel and Harvey demonstrated in animals that deficiency in this vitamin caused decreased tensile strength of the wounds. Another reporter, Faulkner, noted a lack of mucous material in the absence of vitamin C. This mucous material seals over the serosa and peritoneum. When it is lacking, a leaking of the anastamoses might be encountered.

Vitamin K is necessary to control bleeding, to prevent hematoma, and great separation of tissue. When excessive bleeding does occur extra time is needed to clear away that extra amount of blood before complete healing takes place, and the extra blood acts as an additional medium for organism growth.

The healing power of the individual, his health in general, whether he is properly nourished, whether his protein and vitamin intake are sufficient, whether his water balance is maintained, how he reacts to the various types of suture materials, all these enter into a discussion of wound healing.

The surgeon's influence on wound healing is the other side of the picture. The site of the incision has undergone much discussion as a factor in disruption; many stating that evisceration occurs more frequently in upper abdominal surgery than in lower abdominal surgery. However, in scanning large numbers of cases it results that evisceration is not related to the site of the incision.

The amount of necrosed tissue has direct bearing upon wound healing, hence tissue care becomes an important part of the surgeon's responsibility. He must be cautious to prevent mass ligation of vessels and the incorporation of large amounts of tissue into the suture.

Choice of suture material, whether absorbable or non-absorbable, must be made for each particular phase of surgery. The size of the suture must be considered, for a large suture requires a large needle, which in turn determines that a large hole is made, needing a great number of collogen fibrils and fibroblasts to fill it. The tensile strength of the various suture material must be known, so as to avoid selecting a material of much greater strength than the tissue it is to hold together. Whether sutures are to be continuous or interrupted is left to the judgment of the surgeon. Much has been said in favor of the interrupted type; however, cases of evisceration have been reported when interrupted sutures were used in cotton and silk.

In the tying of knots it is to be remembered that tissue must grow together, that sutures must not be drawn too tensely, and knots should not be tied so tightly as to cause necrosis and sloughing of the tissue in the loop, thus voiding the effectiveness. Knots improperly tied will slip. Taylor showed that wet chromic, no matter how it is tied, makes a poor knot, and that neither a true not a false knot is trustworthy. The most reliable knot is a triple throw each in a different direction.

The anesthetic is important in the postoperative course as well as in wound healing, for if the patient is kept anesthetized until the fascia is closed, the closing is greatly facilitated. On the other hand, if the patient is permitted to take long breaths and attempts to vomit there is added difficulty in closing the abdomen; and there is also the possibility of tearing out of the suture and a resulting bad closure. The use of carbon dioxide toward the end of surgery often causes the patient to take forceful breaths. Koster and Kasman believe that spinal anesthesia affords better relaxation and ease of closure. Pulmonary infection resulting from anesthesia often lowers body resistance and as a consequence tends to diminish the healing power of the patient. In this indirect manner also anesthesia is related to wound healing.

Drains have been blamed for many cases of evisceration. However, Maes and Boyce have shown that drains are not to be blamed entirely, because there have been as many cases of evisceration when a drain was used as there have been when a drain was not used. Pickrell, with American statistics, stated that one-third of the cases of evisceration had been drained, and Madelung found that one-sixth of the European cases had been drained. Colp found that evisceration occurred in 1.222 per cent of the cases drained and in 0.84 per cent of the cases not drained. As for the cases at Charity Hospital, a drain was used in six cases in the later study and in twelve cases in the earlier study. However, there are many factors to be considered before stating that the drain is responsible for the evisceration. The wound should be examined to determine the presence of infection, to note if improper closure was made, and if a hole was left along the wound edges. In the light of the possibilities of evisceration it might be suggested that a stab wound should be used for the drain wholly apart from the original wound so as to prevent complications.

Preoperative and postoperative care on the part of the surgeon include the stabilization of nutrition, the building up of the serum protein by blood transfusion, the maintenance of water balance both in preparation for operation as well as postoperatively for healing. Suspicion of the early diagnosis of evisceration is important. The patient whose temperature suddenly rises after having been normal, or the patient whose temperature elevation persists with an appearance of sero-purulent discharge on the dressing, should arouse the suspicion of non-coaptation of the wound edges. Once such a suspicion is maintained it would be better to remove the sutures under sterile conditions in the operating room, and gently probe the skin to determine the presence of evisceration. If such a condition is encountered it can be handled under sterile conditions and the possibility of peritonitis avoided. Eviscerations are usually diagnosed after the gut or the omentum has extruded for some time and given a chance to go through temperature changes and become contaminated. Those patients in whom there is clinical evidence of obstruction or partial obstruction suggest evisceration since a loop of gut may have herniated into the wound and become incarcerated.

In 1934 Maes and Boyce made a survey of evisceration during the preceding ten years. Upon their comprehensive study is based this comparative study. They surveyed 44 cases, which are herein compared with 51 cases that occurred in the next decade. Their early writings pointed out that the percentage of evisceration was high due to the different kinds of surgical gut that were being tried. Indeed, one surgeon had seven cases and another had five cases, accounting for 27.2 per cent of the cases in the early study. Among the cases in the next decade, seven surgeons accounted for 16 cases of 51.6 per cent. There were 27 surgeons who had cases that eviscerated in the early study and 31 in the later group. The yearly distribution can be ascertained by a glance at table 4. The only significant fact in the early report is that during three of the years there was not one case of evisceration.

TABLE 4
NUMBER OF CASES ACCORDING TO YEARS

1934	1	1924	5
1935	2	1925	0
1936	10	1926	2
1937	3	1927	7
1938	5	1928	1
1939	4	1929	1
1940	4	1930	0
1941	7	1931	0
1942	7	1932	5
1943	8	1933	13
Total	51	Total	44

Race distribution was apparently equal. As for sex, in both studies the females predominated in the negro race, and the males among the white. The relatively small numbers studied is not a fair test of distribution as to sex, and in large numbers of cases the distribution equalizes itself. The age distribution is recorded in table 3.

TABLE 5

	1934 to 1944	1924 to 1934
Urgent surgery	15 4 died or 26%	15 11 died or 73.3%
Elective surgery	36 12 died or 33%	18 1 died or 5.5%
Appendectomies	5 or 9.8%	19 or 43.2%
Fibroids	10 or 19.6%	9 or 18.1%

Maes and Boyce point out that 63.8 per cent of the cases occurred between 20 and forty years of age, which is contrary to many other reports. The later study found 43.1 per cent during that age group, but 59 per cent in the 3 to 50 years group. However evisceration occurred in all age groups, some during the first months of life who were operated upon for intestinal obstruction.

From a survey of the patients' admission notes, laboratory findings, and x-ray plates, the relative risk was determined, being divided into good, fair, and poor. Table 7 presents a detailed listing of the etiology of the primary pathology. There were 19 cases placed in the group considered good risk. Of these three died. In the corresponding group in the earlier study there were 26 cases of which two died. Under "fair risk" there were 16 cases of which four died in the later report, as against eight cases of which four died in the report by Maes and Boyce. In the "poor risk" group were placed 18 cases, of which seven died in the later study, as compared with ten cases of which seven died in the earlier report. The group distribution cannot be considered strictly accurate since the criteria for placement in the different groups were not constant for both studies. The relative rise in mortality rate in those classed under good risk from 7 per cent to 15 per cent in the later group can find support in the fact that the mortality from evisceration in elective surgery jumped from 5.5 per cent to 33 per cent in the later group. In contrast there was a sharp decline in the number of deaths

TABLE 7
PREOPERATIVE RISK

Operation	No. of cases	No. of deaths
A. Good Risk		
Uterine fibroid	9	1
Chronic appendicitis	4	
Ovarian cyst	1	
Intestinal obstruction	2	1
Caesarian section	1	
Chronic cholecystitis	1	
Exploratory	1	1
TOTAL	19	3
(In the early study under "good risk" there were 26 cases of which 2 died.)		
B. Fair Risk		
Cholelithiasis	4	
Pistol shot	2	1
Intestinal obstruction	2	1
Acute pelvic inflammatory disease	1	
Uterine fibroid	1	
Rupture urinary bladder	1	1
Exploratory laparotomy	1	
Urethral stone	1	1
Splenectomy	1	
Gastric ulcer	1	
Prostatic hypertrophy	1	
TOTAL	16	4
(In the early study under "fair risk" there were 8 cases of which 4 died.)		
C. Poor Risk		
1. Carcinoma of		
Stomach	7	4
Pancreas	1	1
Cecum	1	
Esophagus	1	1
Ileum	1	
2. Rupture of		
Gallbladder	1	
Appendix	1	
Jejunum	1	
Stomach	1	
3. Pelvic inflammatory disease	1	1
4. Fecal fistula	1	
5. Intestinal obstruction	1	
TOTAL	18	7
(In the early study under "poor risk" there were 10 cases of which 7 died.)		

from evisceration associated with urgent surgery.

Carcinoma occurred in eleven cases of which five died in the later group. In the earlier group there were five cases of carcinoma, but their deaths were not attributed to this disease.

Appendectomies were done in five cases (9.8 per cent) of the later study; whereas there were 19 appendectomies (43.2 per cent) in the earlier study. In the later study only one case of evisceration occurred among those operated upon for a ruptured appendix.

Removal of fibroids accounted for 18.1 per cent in the early groups and 19.6 per cent in the later group.

It has been stated that upper abdominal incisions eviscerated with higher frequency than lower. Maes and Boyce pointed out that 25 per cent of cases occurred in the upper abdomen and 75 per cent followed lower abdominal surgery. In the later study 20 cases (39.2 per cent) occurred in the upper abdomen as against 21 (41.1 per cent) following lower abdominal surgery. Three cases occurred through previous scars in the later report as against one in the early group. Maes and Boyce reported one case following a McBurney incision; the later study revealed one case.

Seventy-five per cent of the cases of evisceration in the later study occurred between the fifth and the tenth day, whereas 50 per cent occurred before the seventh day in the early group. There were nine grossly infected wounds at the time of repair of evisceration; in the early report there were 17.

As Maes and Boyce pointed out, in many cases death was not due entirely to evisceration, but to associated pathology. Pneumonia accounted for five deaths in the later group and none in the early group; peritonitis accounted for three deaths in the later group and seven in the early group. Carcinoma caused five deaths in the later group and none in the early group. Intestinal obstruction caused one death in each group. Death was attributed to shock in one case in the later and in five cases in the early group.

DISCUSSION

The causes of evisceration have been discussed by many authors and their conclusions vary. Faulty closure of the peritoneum has been advanced as a most plausible cause. However, the statistics herein recorded do not confirm faulty closure any more than they confirm cough, hiccough, vomiting, or early rising, because evisceration even occurred in those cases wherein interrupted sutures were used in closing the abdomen. If faulty closure was the cause of evisceration, would not one suture hold even though the omentum did protrude somewhere? Why should the entire suture line become separated and the wound edges fall apart by the most gentle pressure?

Those who contend that evisceration is an allergic response find it difficult to hurdle many of the statements that have been made against this idea. It is now claimed that chromic is no longer in a state to produce antigenic bodies; that more than 900 c. c. of suture material is needed to sensitize a rabbit; that workers are often unable to obtain the same results when repeating an experiment. Besides these statements there is the ever-present fact that evisceration does occur when suture material is used that is not capable of producing antigenic bodies.

If stress and strain is suggested as a causative factor, it can be said that evisceration should occur during the first few days, since from the fourth day on the pressure needed to disrupt the wound becomes greater. Yet the majority of cases of evisceration occur after the fifth day and the lag period has passed.

Infection cannot be a leading cause since only nine cases were infected among the large group surveyed.

Other reporters mention the existence of large quantities of blood between the wound edges, yet no operator, in exploring a wound, saw the need of clamping the free bleeding points.

It is the conclusion, therefore, of this report that there is as yet no feasible causative factor for evisceration, and that the particular findings at the time of resuturing do not help clarify the etiology of evisceration.

One may also further conclude that the statistical report of Maes and Boyce covering the years 1924 to 1934 does not differ materially from the report of the next decade.

TABLE 1

Bedside Notes

	1934 to 1944	1924 to 1934
Vomiting	3	7
Cough	3	3
Hiccough	0	3
Sudden motion	0	1
Passing gastric tube	0	1
By inspecting	6	3
Pneumonia	6	1
Bronchitis	4	0
Positive Wassermann	1	0
Drain	6	12
Measles	1	0

TABLE 2

RACE

	1934 to 1944	1924 to 1934
White:	30 or 58.6%	27 or 61.4%
	M-24 F-6	
Colored:	21 or 41.4%	17 or 38.6%
	M-7 F-14	M-5 F-12
Mortality:	16 or 31.3%	
	M-10 F-6	13 or 26.25%

TABLE 3

AGE DISTRIBUTION

Decades		1934 to 1944		1924 to 1934
1st		4		2
2nd	22 or 43.1%	2	28 or 63.8%	11
3rd		8		11
4th		12		6
5th		10		5
6th		6		6
7th		9		2
8th		0		1

TABLE 6

	1934 to 1944	1924 to 1934
Upper abdominal incisions that eviscerated	20 cases or 39.2%	11 cases or 25%
Lower abdominal incisions that eviscerated	21 cases or 41.1%	33 cases or 75%
Midline	32	16
McBurney	1	6
Through previous scar	3	1

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DISCUSSION

Dr. Frederick F. Boyce (New Orleans): Since Dr. D'Ingianni's discussion of wound dehiscence at the New Orleans Charity Hospital for the 20 year period ending in 1943 includes a 10 year period upon which I previously reported, I feel that I should comment upon his remarks.

The contradictions evident during the period of my study have apparently continued during the additional period studied by Dr. D'Ingianni. Let me mention a few of them:

It is generally stated that the highest incidence of wound disruption occurs in upper abdominal incisions. In my own study the incidence was much higher in lower abdominal incisions, presumably because of the high incidence of gynecologic operations at Charity Hospital. My series was unique in one respect, I believe, that six disruptions occurred in McBurney incisions, and one occurred after repair of an inguinal hernia. So far as I could determine, the accident had not previously been reported in either of these incisions. No details were given concerning the hernia incision which permitted any conclusions. The McBurney incision seems in each case to have been extended and so modified that the inner part of the internal oblique and the transversalis muscles were divided, and the assumption is that they were inadequately repaired, leaving a potential weakness.

Statements as to the higher incidence of the accident in males or in females obviously depend upon whether or not gynecologic cases are included in the particular series under discussion. If this factor is not taken into consideration, false conclusions can readily be drawn. In my own series, 12 of the 44 ruptures studied occurred in negro women, eight of whom had been submitted to gynecologic operations.

My impression previous to my analysis that the accident would prove more frequent in emergency than in elective surgery was not borne out by the figures, nor was my impression, which is generally shared, that it would be more frequent in malignant than in benign disease.

At the time of my report, the largest series reported in the literature, and I believe still the largest series on record, consisted of the 712 cases collected by Sokolov, chiefly from European clinics. The largest series reported in the American literature at the time was the approximately 175 cases reported before the New York Surgical Society by Meleney and Howes, Colp, Grace, White and Heyd, as a symposium. It should be noted that these large series consist of collected cases. They do not represent the experience of individual surgons. As a matter of fact, this is not a usual condition. The reported individual series are all small, and the personal experience of individual surgeons is limited. We have no right, therefore, to draw sweeping conclusions or to make dogmatic statements concerning it.

Certainly sweeping statements cannot be made concerning its causation. Sokolov laid much stress upon seasonal incidence, which I still consider of minor importance. His emphasis upon vitamin C deficiency, however, upon which I was not originally inclined to lay much stress, now seems justified. Recent studies have shown that many surgical patients do have a vitamin C deficiency, and it is now the general practice to fortify all such patients by the administration of the vitamin, usually parenterally. I do not know whether any study has been made to determine whether the incidence of wound dehiscence has been greatly decreased by this measure. My own impression is that it has not been. At any rate, vitamin C deficiency is certainly not the sole cause of evisceration.

An interesting consideration is that the accident does not seem universally preventable with any kind of suture material, with the possible exception of silver wire. Drainage is a predisposing cause but obviously not a basic cause. The importance of protein deficiencies is now generally acknowledged.

In the light of present knowledge, the most reasonable conclusion seems to be that the accident is due to many possible causes rather than to a single universally operative cause. I myself still hold the opinion which I expressed in 1934 that wound disruption is peculiarly likely to occur in patients who are poor surgical risks, and that the death rate is likely to be much higher in this group of patients than in any other group.

Dr. Vincente D'Ingianni (In closing): I wish to thank Dr. Boyce for his discussion.

CLINICAL SUGGESTIONS FOR ENDOCRINE DIAGNOSIS AND TREATMENT*

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Endocrinology in its earlier years depended largely on clinical observations, a good history and careful physical examination, for diagnosis and treatment. In an effort probably to meet the criticism as to the validity of diagnoses so made and the efficacy of therapy so controlled, endocrinologists went to the other extreme of relying very largely on the laboratory. Most of these tests are not available to men in private practice and consequently for the time have very little social or economic value no matter what their "scientific" value or interest. The literature of endocrinology is so voluminous that only men interested solely in that subject can keep up with it. Along with these two developments has come a shift away from an ignoring or minimizing of the importance of a careful history and physical examination plus carefully chosen therapeutic tests.

A very small percentage of endocrinopathies are treated by endocrinologists. The vast majority, if treated at all, must be cared for by men in other fields of medicine, particularly by that most valuable of all medical men, the general practitioner. In order to save energy in these strenuous times of doctor shortage the writer has offered a few suggestions that may be found useful until civilian practice again becomes more nearly normal.

THE INTERPRETATION OF THE BASAL METABOLIC RATE

It is generally assumed that the B.M.R. indicates the level of thyroid function, a low B.M.R. signifying hypothyroidism and an elevated B.M.R., hyperthyroidism. Both of these assumptions should be taken with a large grain of salt. If a patient is found to have a low B.M.R. but does not exhibit corresponding signs and symptoms of hypothyroidism, it may be safely assumed that the low B.M.R. is due to something other than thyroid deficiency. The low reading may be due to some non-endocrine condition or to pituitary or adrenal deficiency. The signs and symptoms of thyroid deficiency are too well known to need enumeration now. But certain things should be looked for: mental or physical retardation, a gain in weight, slow pulse and sensitiveness to cold. The last point is quite significant. The reaction to temperature may be used in a rough way to help differentiate pituitary and/or adrenal deficiency from hypothyroidism. The victim of the latter is sensitive to cold but enjoys hot weather. The victim of adrenal deficiency is equally sensitive to cold but is also adversely affected by heat. The victim of hypopituitarism is much less sensitive to either heat or cold than is the victim of either of the other two conditions.

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*Presented before Morgan County (Illinois) Medical Society April 12, 1945.

A therapeutic test will help to clarify the situation. The administration of thyroid in doses of two grains per day to an adult will within a week bring about some improvement in the victim of hypothyroidism, whereas the same dose of thyroid will make the patient with hypoadrenia more miserable. It will cause nervousness, tachycardia and perhaps heart consciousness. It will at the same time aggravate most of his other symptoms. The injection of 0.5 c. c. of anterior pituitary extract is likely to relieve some of the symptoms of hypopituitarism within an hour. All that is needed is to give the patient an injection and then have him or her wait in the reception room for about an hour and then inquire as to how he or she feels and which, if any, of the symptoms have been relieved. Headache, of which these people often complain, will be helped almost as promptly as if the patient had been given morphine. They will often have a sense of well being that they had not experienced for a long time. If either of these things occurs, it is entirely safe to assume that a course of such injections given twice weekly for a month or so will produce considerable improvement.

On the other hand, the fat patient who appears to be a victim of pituitary and thyroid deficiency may have a rapid pulse and an elevated B.M.R. Instead of asking the technician to repeat the test, check the patient again for signs of pituitary and/or thyroid deficiency and then give him a therapeutic test. It is not unusual for patients with pituitary and thyroid deficiency to have a B.M.R. of plus 20 to plus 30 and a pulse of 100 or better and yet be able to tolerate one grain or more of thyroid per day. This will be followed by a reduction in pulse rate, loss of weight and relief of many of the symptoms of which these folks complain.

This curious situation was first called to my attention by the late William Engelbach. He had under his care a very fat woman who had most of the signs and symptoms of pituitary and thyroid deficiency, but she also had a tachycardia and her basal rate was plus 40. The tachycardia and the B.M.R. for a long time frightened him away from giving her thyroid, but he finally decided to disregard these two things and to rely on the clinical observations and so gave her thyroid with the result that her pulse slowed down, she lost weight and was relieved of her symptoms.

Over twenty years I have seen this situation many times. Such persons should be given extracts of the anterior and posterior lobes of the pituitary. Their reaction to these extracts should be tested on different days. The test for the anterior lobe has already been mentioned. To test the patient's tolerance or need for posterior lobe extract, give 5 minims of the obstetrical preparation. If within an hour no nausea, faintness or annoying intestinal cramps occur, such doses can be safely given twice weekly. Anterior and posterior lobe extracts should be given in the same syringe at the same time except that posterior lobe extract should not be given during or within a week before a menstrual period. To do so will almost invariably cause the following period to be painful. The injections should be continued until the symptoms are relieved and the patient loses a satisfactory amount of weight. Of course adequate dietary restrictions should be imposed.

The point is that in obese persons an elevation of the B.M.R. cannot be accepted without question as signifying hyperthyroidism and the final decision can most safely be made by therapeutic tests.

If one proposes to use pituitary extracts in treatment, he should, if it is convenient, do a glucose tolerance test. If that is not convenient, it is well to check the blood sugar an hour after the injection of these extracts. If there is a marked rise after the injection, they should not be used in treatment. This need not be a fasting blood sugar. If neither of these things can be done conveniently, the urine should be examined for sugar at least every sixty days while these extracts are being given.

ADDISON'S DISEASE

Addison's disease is a very rare disorder. About 25 deaths are reported each year in Illinois. A definite diagnosis is difficult, particularly in the absence of pigmentation. The "water test", while not conclusive, is usually helpful and gives a general idea as to whether Addison's disease may be ruled out or whether the study should be pursued further. The test is conducted as follows:

The day before, the patient eats his usual diet but omits extra salt. After 6 p. m. he has no food or drink. At 10:30 p. m. he voids and discards the urine. Any voided thereafter until and including 7:30 a. m. is collected and measured. At 8:30 a. m. the patient voids and discards the urine. He is then given 9 c. c. of water per pound. This he drinks in the course of 45 minutes. He is asked to void at 9:30, 10:30, 11:30 a. m. and 12:30 p. m. Each of these specimens is measured. The volume of the urine voided during the night is compared with the largest single specimen voided between 8:30 a. m. and 12:30 p. m. If the volume of urine voided during the night is less in amount than the urine voided in any one hour during the morning, the patient is open to the suspicion that he does have Addison's disease and further studies are necessary.

Of course one can always use a therapeutic test, which, while neither scientific nor conclusive, may be helpful in these times. The patient may be given sodium chloride in enteric coated tablets 3 to 6 grams daily with 5 mg. of desoxycorticosterone acetate. If marked improvement occurs quickly, there is at least considerable likelihood that the patient does have Addison's disease and the treatment should be continued until opportunities are available for complete studies either to vindicate or disprove the diagnosis.

HYPERINSULINISM

Hyperinsulinism due to adenoma of the pancreas is an unusual disorder, but spontaneous hypoglycemia, particularly mild forms, is seen rather frequently. The endocrine disorders most often responsible are pituitary and thyroid deficiency. The best procedure for determining whether hypoglycemia is responsible for the patient's symptoms is to do a glucose tolerance test. However, if the physician lacks facilities for doing this or the patient cannot spare the time for it, considerable information may be had simply by asking the patient to note carefully the time when his symptoms occur, then have the next meal postponed for an hour or so beyond that time. Symptoms due to hypoglycemia are likely to be aggravated by this procedure. Or have the patient take a little food an hour before the time when the symptoms usually occur. Their prevention by this maneuver is strong presumptive evidence of hypoglycemia. Or give the patient one grain of thyroid per day and injections of 0.5 c. c. each of anterior and posterior pituitary extract twice a week. This measure will sometimes relieve the symptoms in a short time.

FROEHLICH'S SYNDROME

Fat youngsters with hypogonadism, whether they be called Froehlich's syndrome or by some other name, present the same pattern. They are the victims of hypopituitarism and hypothyroidism and all of them yield to the same treatment with one important difference. Those of normal height or more should receive some gonadotropic preparation, such as antuitrin-S, APL or follutein, in doses of 50 to 100 units. These should be given twice or three times weekly. If the child is of less than average height, give some anterior lobe extract containing the growth hormone in doses of 0.5 to 1.0 c. c. The gonadotropic preparations are alleged to hasten closure of the epiphyseal lines. While this danger is probably greatly exaggerated, we should at least give the child the benefit of the doubt and use growth-promoting compounds in those below average height. In some cases it is well to alternate the gonadotropic preparation with the growth-promoting extract, using the latter one week out of the month or two weeks every two months.

They all require thyroid in such doses as can be tolerated without signs of hyperthyroidism. The correct dose can be determined only by checking the child's response to gradually increased doses. Begin with 1/4 to 1/2 grain per day, depending on the age of the child. Increase the dose by 1/4 grain per day once a week. When that dose is reached which causes tremor, tachycardia, nervousness or insomnia, decrease the dose by 25 per cent and continue at that level. It is not necessary to determine the B.M.R. either before beginning or during treatment, which should be continued until normal weight and normal development of the genitalia is reached. Treatment may then be gradually withdrawn.

All of these children require posterior lobe extracts in doses just short of the amount which causes nausea, faintness or annoying intestinal cramps. To determine this point give three minims of obstetrical pituitrin and keep the child in the office or under observation for about an hour. If this dose produces no unpleasant reaction, two days later another dose of five minims can be given. Few children will need more than that. If three or five minims produce cramps or other unpleasant symptoms, smaller doses should be given until one determines the amount that can be given without producing annoying symptoms. This dose should then be given two or three times a week in the same syringe and at the same time as the other extracts.

If injections are given three times a week, this frequency should not be continued for more than 60 days. At the end of that time treatment should be reduced to twice a week for another 60 days. At the end of that time it should be reduced to once every five days, in another 60 days to once a week, and then to once in ten days, and so on. These patients should be kept under observation until they obtain normal stature, normal weight and normal development of the genitalia. Treatment may not need to be continued more than a year, but they should be seen at intervals of two or three months for some years. In some cases there is a tendency for the genitalia to regress or for obesity to recur, and at the first sign of such a recurrence, treatment should be reinstituted.

Thyroid should be started as soon as the diagnosis is made and whole pituitary or anterior lobe may be given, as enteric coated pills in doses of 1 to 5 grains t. i. d., till the child is ten years of age, when the pituitary preparations should be given subcutaneously.

This condition so often follows some childhood infection, particularly measles, mumps, scarlet fever, diphtheria or pneumonia, that after any of these infections every child should be watched for the following signs: rapid gain in weight; cessation or retardation of growth or sexual development; falling off in scholastic work. Should any of these things be observed, the child should be carefully watched for the appearance of the others and treatment instituted at once. School nurses and school doctors should watch every child under their care for the above signs of thyroid or pituitary deficiency and refer such as have them to their own physicians for more detailed study.

The only laboratory work needed is an

occasional—about once in 60 days—examination of the urine. Glycosuria has been observed after treatment with the gonadotropic preparations.

It is often argued that these children will normalize without treatment. Undoubtedly this is often true. In many others it is not. It is my contention that we have no right to subject any child to the hazard of arriving at maturity with the stigmata of obesity and hypogonadism when we have remedies adequate to prevent such a misfortune. Many cases of scarlet fever or pneumonia would recover without treatment, but we take no chances. Why should we in these endocrine disorders?

TREATMENT OF THE MENOPAUSE

There is some unimportant discussion as to the percentage of menopausal women who need treatment. It has been claimed that no woman should be given estrogens until after an excess of androgens had been demonstrated in her urine. This idea is erroneous. Every woman who consults a physician regarding the menopause needs treatment. In many this needs to be only instruction or advice. The physician can usually decide when this is true by listening to the woman's complaints. If estrogens are needed, begin with small doses, usually 2,000 I. U., twice a week. If after three or four weeks symptoms are not controlled, the doses may be increased to 3,000 I.U. and later, if needed, to 10,000 I.U. Most women are kept quite comfortable on the smaller doses. Some are made more uncomfortable by the larger doses. In my experience 10,000 I.U. are seldom needed.

Doses of estrogens should be determined individually as to size and frequency for each patient on the basis of clinical relief of symptoms. Select one product; learn exactly how to use it; and stick to it.

Several products (progynon-DH, emmenin, theelol) are effective by mouth. Stilbestrol is now popular, but I am not enthusiastic about it. Premarin (Ayerst) looks promising so far. Octofollin and estinyl are others. Preparations by mouth are seldom sufficient to control menopausal symptoms though they reduce the amount and frequency of injections needed.

Another useful procedure, which will not replace the estrogens but will frequently reduce the dose needed, is small doses of x-rays applied to the pituitary and adrenals (120 KV, 3 ma.; 50 cm. skin target distance, 2 mm. aluminum filter; 10 x 10 cm. portal for each side of the pituitary and 15 x 15 cm. common portal for the adrenals) giving 50 r to each area treated. Give no more frequently than once a month.

SIGNIFICANT POINTS IN THE HISTORY

A women who gains weight rapidly and at the same time experiences a decrease in the frequency or amount of the menstrual flow usually owes her trouble to hypopituitarism. In less than three per cent of the cases this will be due to tumor.

Victims of hypopituitarism and hypothyroidism often experience diurnal somnolence and are wakeful at night.

Obese women who owe at least part of their trouble to hypopituitarism often give the following history: At birth they weighed less than seven pounds. Development was normal. They were rather less than average weight until after some infection, puberty, marriage, or pregnancy. The accumulation of weight was steady and rather rapid. They were unable to nurse their babies or could do so but a short time. With each succeeding pregnancy they gained more weight and had less milk.

Female victims of hypopituitarism often have a headache three to seven days before or two days after the menstrual period. Often they experience premenstrual chilliness and a craving for sweets.

Victims of hypopituitarism and hypothyroidism are often slow in overcoming nocturnal enuresis. After the habit is controlled, it may recur at the age of 8 to 12 years.

The value of a good history may be illustrated by one case history:

A 25 year old nurse came under observation November 4, 1937. She complained that for the preceding 18 months she had had a feeling of tightness about her head and vomited when she was nervous. She frequently fainted after exertion. Four times a year she had a migrainous headache three days before her menstrual periods. She had frequent attacks of urticaria (allergic manifestations are common in pituitary deficiency); had gained ten pounds in the week before I saw her (such a rapid gain is usually due to hypopituitarism); and was emotional, tearful, and introspective, as victims of ovarian insufficiency often are.

Her first menstrual period, at the age of 12, lasted three weeks, a further sign of hypopituitarism. At the age of 22 she had typhoid and her appendix was removed—events which tend to damage the pituitary. Afterward her periods occurred at three to five week intervals and the flow was scant, another indication of pituitary and ovarian insufficiency. She had had mumps, measles and scarlet fever, all of which tend to damage the pituitary. Mumps often attack the ovaries directly though nothing in the history indicated that this had happened to her.

Her height was 5 feet, 6 inches, indicating an abundance of the growth hormone during her early years (not infrequently such women have some deficiency of the pituitary sex hormone). Her weight was 156 1/2 pounds. Her B.M.R. ranged from minus 5 to 25 per cent (in the absence of physical signs of hypothyroidism such a low reading is often due to hypopituitarism). Her obesity, too, was of the pituitary type. The pubic hair was of the male type and there was some hair about the nipples.

She had been told that her trouble was largely mental and advised to think less about herself and more about her work, which was very exacting and sometimes exciting.

On the basis of the history of premenstrual migrainous headaches, a menorrhagic first period, scanty and irregular periods after typhoid and appendectomy, emotional and gastrointestinal upsets, the rapid gain in weight, and the physical findings of the height, pituitary type of obesity and lack of other significant findings, a diagnosis was made of pituitary and ovarian insufficiency.

Treatment consisted of anterior pituitary extract (not antuitrin-S) 0.5 c. c. twice weekly, with ovarian residue 1 c. c. given in the same syringe at the same time, and ovarian concentrate (Armour) one capsule three times a day by mouth. Her symptoms rapidly decreased in severity and shortly disappeared completely.

SUMMARY

The foregoing suggestions are offered only in the hope that they may in some cases save time and energy for some overworked physician.

A CASE REPORT OF RECTO-VESICO-VAGINAL FISTULAE*

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NEW ORLEANS

M. F., a white, married, nulliparous female, 30 years of age, was first seen by me in April, 1944, complaining of incontinence of urine of one month's duration.

Past History: Patient discovered that she had a positive Wassermann in 1940 and has taken treatment intermittantly ever since. She was intolerant to arsenic and Wassermann has never been negative.

Present Illness: In April 1944, three months before I first saw her, she consulted Dr. S. J. Rosenthal because of long standing vaginal discharge, for which she had been treated for some time without results. On February 1, 1944, she had a D. & C., biopsy of cervix and application of radium.

Operative Procedure: A small piece of tissue was removed from the cervix uteri for diagnostic purposes. The cervix was dilated and 60 mgm. of radium inserted into the cervix; 30 mgm. were distributed about the cervix. Three wet packs were put in vaginally.

Biopsy Report: Acute and chronic inflammatory cystic cervicitis; one area shows early adenocarcinoma.

Approximately two weeks later she noticed a foul watery discharge. This watery discharge increased during the next three weeks, during which time the patient voided very little urine. On March 6, 1944 five weeks after application of radium, she had an abdominal total hysterectomy. No difficulty was encountered; there was no evidence of injury to bladder or bowel. The significant pathologic findings were:

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*Read before the Orleans Parish Medical Society, February 12, 1945.

"About 3½ cm. down the endometrial cavity from the fundus of the uterus about in the position of the lower uterine segment, there appears a yellow, creamy, light greenish necrotic-like area, which presents a foul odor. This necrotic tissue appears to have eroded into the myometrium. It extends downward into the cervix, which has been detached from this portion of the fundus. The vaginal portion of the cervix presents a circumscribed, eroded area, measuring approximately 1½ cm. in diameter. The endometrial lining of the cervix is continuous with the necrotic, greenish pathological area described in the lower uterine section. The lateral margin of this necrotic area in the lower uterine segment appears to be indurated and firm in consistency."

Following this operation, all of the urine drained through the vagina. On getting out of bed on the fourteenth postoperative day, the patient noticed some feces in the drainage.

On my first examination, bivalve inspection of the vagina revealed vagina to be shallow. Granulation tissue covered the vaginal vault, which was so contracted that speculum could be only partially opened. There was an opening at the top of the vagina anteriorly and urine could be seen to run out. There were a few particles of feces in the vagina also. Digital examination of the rectum revealed an opening anteriorly 2 cm. in diameter.

Cystoscopy: Urethra negative. It was impossible to distend the bladder as the fluid flowed out readily through a fistula above the trigone and just to the left of the mid-line. Complete inspection of bladder was impossible. Both ureters were open and urine from each kidney was negative.

On May 30, 1944, laparotomy was done by Dr. Rosenthal, at which I assisted. After exposing the lower sigmoid and rectum, we found the rectum densely adherent to the bladder. In separating the bladder from the rectum, a fistula connecting the two was opened. There were then two openings in the bowel on its anterior surface; one about 2 cm. in diameter and the other about 3 x 4 cm. There was also an opening into the vagina and an opening in the posterior wall of the bladder near the dome, approximately 2 cm. in diameter. The bowel was closed first using No. 1 chromic interrupted in two layers of sutures. The opening in the bladder was then closed using No. 1 chromic continuous, reinforced by a second row of interrupted sutures of the same material. No attempt to free the vaginal fascia from the bladder was made, as it was very densely adherent and apparently did not interfere with the mobility of the bladder wall. This I am sure, was a mistake. The vaginal vault was not closed and a cigarette drain was brought out through the vagina; 10 mgm. of sulfanilamide crystals were left in the abdomen and indwelling catheter was placed in the bladder.

The postoperative course was uneventful. Full liquids and a soft diet were allowed on the third day; purgative on the sixth day. Indwelling catheter was left in for twelve days. Patient noticed a recurrence of urinary leakage on the eighth postoperative day and fecal leakage about the fiteenth day. The only difference the patient noticed following this operation was that there was much less fecal leakage.

On November 27, 1944, a suprapubic approach was made in an attempt to close the fistula according to the technic of Hugh Young. The bladder was found to have a good capacity and was normal in appearance except for the region of the sinus. There, it was funneled out toward the sinus, which was 2½ cm. in diameter, connecting directly with the rectum. A No. 6 catheter was passed up each ureter. This reduced chances of injury to the ureters and kept the urine out of the operative field. An incision was made around the circumference of the sinus about 2 mm. from its edge, and the lining of the tract dissected away. Following this the bowel was freed for approximately 1½ cm. around the entire circumference of the fistulous tract. This only partially corrected the distorted contour of the bladder. The vaginal discharge has gradually decreased in amount. At present it is barely perceptible.

Suprapubic catheter was left in for one month, after which it was removed and an indwelling urethral catheter was put in until the suprapubic sinus healed. Since that time there has been no urinary leakage. Cystoscopy showed the fistula was healed. Suture line was preceptable. Examination revealed slight fecal leakage through the vagina after taking purgative on the eleventh postoperative day. This has continued since but fascia was then dissected away from the bladder wall for a distance of 2½ cm. This completely corrected the funneling of the bladder and allowed ample relaxation of the bladder wall for closure without tension on the suture line. Chromic No. 00 interrupted sutures were used to close all three planes; the bowel was closed in the vertical plane, whereas the vaginal fascia and the bladder wall were closed in the horizontal plane. The rectal tissue was markedly indurated, which should have suggested to me the advisability of resecting the indurated edges of the sinus before closing the rectum. A large pezzer catheter was left in the bladder suprapubically, 5 gms. sulfanilamide crystals left in the wound. The patient was given penicillin 10,000 units, intramuscularly, every three hours until 1,500,000 units were given. Bowels were not allowed to move until the eleventh postoperative day.

COMMENT

The different technics that are employed in the closure of vesico-vaginal and recto-vesico-vaginal fistulae indicate the difficulty in successfully handling these types of cases. There is no one approach that is suitable in every instance.

In this case, the vaginal approach did not seem advisable because of the condition of the tissue in the vault of the vagina. The abdominal approach had already been tried and had failed. This left the trans-vesical approach as the most logical procedure.

I feel that the success obtained here was due first, to the complete mobility of the bladder wall in the involved area, so that the bladder wound could be closed without any tension whatever on the sutures; second, the prolonged suprapubic drainage and third, to the use of penicillin, which probably reduced the amount of infection in the region of the bladder wound.

A wider excision of the fistulous tract in the rectal wall would probably have resulted in a complete closure of the rectal fistula at the same time.

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THE JOURNAL *does not hold itself responsible for statements made by any contributor.*

SUBSTANDARD WAGES AND HEALTH

The receipt from Senator Pepper of several reprints from the proceedings and debates of the 79th Congress give occasion for serious thought. The Senator from Florida in one of the reprints discussed a report of a Sub-Committee on Education and Labor. Senator Pepper maintains that a basic wage should be a minimum of sixty-five cents an hour. We are not prepared to discuss the merits or demerits of this proposal, but we do want to point out that Senator Pepper contends, as have the majority of physicians in opposing socialized medicine, that poor health is due more to poverty than any other one factor. The Senator shows that probably because of substandard living conditions the selective service rejection rate was highest in the lowest income group. It is the belief of the medical profession, that if extreme poverty could be eliminated, that there would be then very little need for so-called socialized medicine in which the medical profession would be regimented and in which the profession would be under the control of a group of centralized bureaucrats in Washington who are not familiar with medical practice, medical ethics, or with the medical man. The whole thing would undoubtedly make an awful botch of the care of the sick.

The one criticism that we would make of Senator Pepper's proposal of a high minimum wage, the lack of which he says has meant ill health, is that it is in this particular group of really poor individuals that free medical care has been available in state, county, and municipal hospitals throughout the country, and that it is this group which is if anything suffering least from inadequate medical attention. It is the people at a little higher income level who, it is claimed by the proponents of socialized medicine, need governmental help and assistance to finance catastrophic illnesses, even ordinary plain illnesses. If there was a minimum hourly wage of sixty-five cents for labor throughout the country real poverty would be abolished and everybody's income would probably be increased. The abolition of poverty, by governmental edict or by any other method, however, is a Utopia which seems far distant in view of the enormous national debt that will exist after the war; but did it come about that the truly poor were no longer with us, inadequate housing, lack of proper nourishment and other factors more responsible for ill health than lack of medical care, would be done away with, and with their disappearance would go the demand for a nation wide medical service act by a small group of people who place the onus of ill-health on the doctor and not where it belongs, on poverty and its results.

SENATE BILL 1176

It would seem that the editorial section of this month's Journal is devoted largely to the opinions and ideas of Senator Pepper of Florida. In extenuation it may be stated that Senator Pepper has shown a great deal of interest in health measures appearing before Congress, and has some excellent ideas with which we agree; but on the other hand he has some ideas with which the medical profession undoubtedly is in discord.

Arguments in favor of an amendment to Senate Bill 1176, increasing the monetary dependence benefits to veterans to obtain an education, are advanced by the Floridian Senator largely from the health aspect. It is pointed out by him that an increase in the monies paid under the GI Bill of Rights would make medical or dental education available to many who would not be able to afford it. It would enable many medical veterans to take advantage of the educational benefits of the GI Bill of Rights because under the terms of the present bill no one can obtain more than one year of medical education under governmental expense unless they can prove that their education was interrupted and that they are under twenty-five years of age. Certainly most doctors would not be able to get further training of any moment under these provisions, unless the monetary benefits are increased. Most doctors in the service are married, are over thirty and have dependents, so that it is obviously impossible for them to maintain a family with the $900 a year now provided for.

Senator Pepper points out that the great majority of doctors in the armed forces want further training after their discharge. Over twenty-eight per cent of the men who replied to the questionnaire sent out by Lieutenant Colonel Lueth have indicated they want training of two years or more. A maximum number of medical veterans should be given the oppotrunity of extensive postgraduate medical training because they have been in jobs completely different from their civilian practice. Senator Pepper says that many of these practitioners have lost contact with the main stream of modern, scientific medicine, and should have an opportunity for liberal postgraduate medical training.

Some of the Senator's remarks have been paraphrased. Two paragraphs will be quoted verbatim to close the editorial:

"The acute civilian need for doctors should not dictate the restrictions of postgraduate medical training courses. It might be said that the civilian need for doctors and other medical personnel is so great that we should not divert any into postgraduate medical courses. It would be very shortsighted, however, to say this. The ultimate good obtained from the training courses will greatly outweigh the temporary continued loss of these men to the civilian population.

"In addition, it should be remembered that most post-graduate medical training such as hospital internships, residencies, fellowships, clinical refresher courses, and the like, all involve examination and treatment of patients, so the personnel is not really lost to the civilian population."

LOW BLOOD PRESSURE

Hypotension has never received the attention devoted to hypertension. The reasons are obvious, but nevertheless low blood blood pressure is an important medical problem. A recent paper by Hamilton* seems worthy of a brief discussion, dealing as it does with some of the various aspects of low blood pressure.

In the first place, it is pointed out that systolic hypotension was at one time considered to be present when the blood pressure was lower than 100 mm. of mercury. Gradually this conception has changed so that nowadays the lower limit of systolic blood pressure is conceded to begin at 90 mm. Likewise, the old conception that blood pressure increased with age can no longer be substantiated as in individuals without arterial disease the blood pressure does not gradually increase as age advances. Low blood pressure is an excellent and fortunate thing for the individual to have, because life insurance statistics definitely show that the mortality rate in persons with blood pressure of over 140 is much higher than those in the lower pressure group. There is a definite relationship; the lower the pressure the lower the mortality rate, so that in a group of people between the ages of 16 and 60, whose blood pressure is less than 100 mm., the death rate is only 35 per cent of the expected rate. Furthermore, people with low blood pressure may be assured that they are extremely unlikely ever to become hypertensive.

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*Hamilton, J. G. M.: Low blood pressure, Edinburgh M. J., 52:166, 1945.

Hamilton asks the question "Is persistent low blood pressure compatible with good health?" In spite of the concept of many physicians that low blood pressure is associated with numerous and many unimportant complaints, statistics show that many athletes have very low blood pressure, and in this war it has been noted that some of the finest physical specimens admitted to the RAF as pilots had low pressures. From innumerable other observations, the author shows that systolic blood pressures ranging between 90-110 mm. are compatible with vigorous health.

At one time hypotension was considered usually to be caused by tuberculosis. Thirty years ago there were dicta which stated that a patient with blood pressure under 110 should be considered to be a candidate for tuberculosis, and if the pressure fell to persistent figures of under 100 that this low pressure was always indicative of pulmonary tuberculosis. Of course these dogmatic statements are erroneous.

To low blood pressure is assigned the production of symptoms such as low-grade physical and mental stamina, dizziness, palpitation, sensitivity to cold, together with many and other miscellaneous and varied complaints. This also is an erroneous idea. In an analysis of a group of people with low blood pressure, who had a large number of chronic complaints of a protean character, Hamilton believes that these patients were suffering from a psychoneurosis, a disorder which is extremely common and which bears no relationship to the low blood pressure. Furthermore, he protests informing the patients that their condition is due to low blood pressure, because in those neurotic individuals it gives them something definite on which to pin their complaints; having their trouble labeled they will let it go at that without making efforts to improve or help themselves. It is of course to be understood that the author is speaking of chronic, long continued low blood pressure and not the sudden drop in pressure which is associated with acute disorders or even chronic infective diseases of varied etiology.

The author makes a good case for many of his observations, but it must be confessed that many physicians will be skeptical of his ideas because hypotension is so commonly found with substandard physical conditions.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

CURRENT MEDICAL PROBLEMS

There are three great problems pressing for immediate attention by the medical profession as follows: First, the return of veteran medical officers to private practice as soon as military necessity will permit; second, the development and expansion of prepayment voluntary medical insurance plan; third, the thorough study and analysis of the Wagner-Murray-Dingell Bill, S. 1050 and H. R. 3293. This year's edition of the above bill is 195 pages, is more comprehensive and more far reaching than the previous bills. There has been considerable activity in medical circles in preparing opposition to this federalization of medicine. The July 21 issue of the American Medical Association Journal, page 883, contains the following:

CONSTRUCTIVE PROGRAM FOR MEDICAL CARE

PREAMBLE

The physicians of the United States are interested in extending to all people in all communities the best possible medical care. The Constitution of the United States, the Bill of Rights and the "American Way of Life" are diametrically opposed to regimentation or any form of totalitarianism. According to available evidence in surveys, most of the American people are not interested in testing in the United States experiments in medical care which have already failed in regimented countries.

The physicians of the United States, through the American Medical Association, have stressed repeatedly the necessity for extending to all corners of this great country the availability of aids for diagnosis and treatment, so that dependency will be minimized and independence will be stimulated. American private enterprise has won and is winning the greatest war in the world's history. Private enterprise and initiative manifested through research may conquer cancer, arthritis and other as yet unconquered scourges of humankind. Science, as history well demonstrates, prospers best when free and unshackled.

PROGRAM

The physicians represented by the American Medical Association propose the following constructive program for the extension of improved health and medical care to all the people:

1. Sustained production leading to better living conditions with improved housing, nutrition and sanitation which are fundamental to good health; we support progressive action toward achieving these objectives.

2. An extended program of disease prevention with the development or extension of organizations for public health service so that every part of our country will have such service, as rapidly as adequate personnel can be trained.

3. Increased hospitalization insurance on a voluntary basis.

4. The development in or extension to all localities of voluntary sickness insurance plans and provision for the extension of these plans to the needy under the principles already established by the American Medical Association.

5. The provision of hospitalization and medical care to the indigent by local authorities under voluntary hospital and sickness insurance plans.

6. A survey of each state by qualified individuals and agencies to establish the need for additional medical care.

7. Federal aid to states where definite need is demonstrated, to be administered by the proper local agencies of the states involved with the help and advice of the medical profession.

8. Extension of information on these plans to all the people with recognition that such voluntary programs need not involve increased taxation.

9. A continuous survey of all voluntary plans for hospitalization and illness to determine their adequacy in meeting needs and maintaining continuous improvement in quality of medical service.

10. Discharge of physicians from the armed services as rapidly as is consistent with the war effort in order to facilitate redistribution and relocation of physicians in areas needing physicians.

11. Increased availability of medical education to young men and women to provide a greater number of physicians for rural areas.

12. Postponement of consideration of revolutionary changes while 60,000 medical men are in the service voluntarily and while 12,000,000 men and women are in uniform to preserve the American democratic system of government.

13. Adoption of federal legislation to provide for adjustments in draft regulation which will permit students to prepare for and continue the study of medicine.

14. Study of postwar medical personnel requirements with special reference to the needs of the veterans' hospitals, the regular army, navy and United States Public Health Service.

This as you will see represents the position of the American Medical Association in supplying adequate medical care and improved health to all the people of the United States. No matter how perfect these general principles, in the final analysis success or failure will rest upon the active interests, help, cooperation, and all-out drive of the state and local societies and individual physicians in carrying out the work proposed.

The State Society has also sent out to every member of the State Society a reprint of a recent editorial appearing in the American Medical Association Journal with an analysis of the Committee on Legal Medicine of this bill. It his hoped that this will prove of interest to the profession and will give them the opportunity of gathering some idea as to what is being proposed in Congress to regiment the profession of medicine. It is hoped also that every member of the State Society had the opportunity of listening in on the radio program on last Thursday, July 19, when there was discussed before "America's Town Hall Meeting of the Air" the question of the Wagner bill. From the above you can understand the intense activity and interest being manifested by the national as well as the local societies in opposition to this pernicious form of legislation. Every doctor should write to his senators and representatives his views on this proposed legislation as soon as the above material has been properly analyzed. It is essential that these opinions be brought in a personal way to our Congressmen in Washington.

Recently the Committee on Postwar Medical Planning sent out to every doctor in the military service a reprint covering suggestions for their benefit. This material appeared in a recent issue of the New Orleans Medical and Surgical Journal. This represents a constructive attempt to render vital aid and help to the returning medical men after information secured from questionnaires was obtained from them. A great deal of work in the future is contemplated by our Committee on Postwar Planning. The Committee on Information of the American Medical Association is sending out to each doctor in the Armed Forces the resumé of its conclusions and recommendations, resulting from the survey which it had made through the various states as to postwar needs for civilian practice of medicine. Questions of internships, residences, and desirable locations for those returning are made a part of this report.

The Cancer Committee of the Louisiana State Medical Society has recently sent out notices to every parish asking that if they do not have already a Cancer Committee that one be appointed. This is especially essential now as the State Cancer Committee is very active, planning for many constructive projects for the future which require the cooperation of our various parish medical societies. The opportunity now appears for a great development in the prevention and treatment of cancer, so do lend your aid and support to this worthy cause.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR OF MEETINGS

August 1.	Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
August 2.	Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.
	Executive Committee, Baptist Hospital, 8 p. m.
August 6.	Board of Directors, Orleans Parish Medical Society, 8 p. m.
August 15.	Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.

August 16.	Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.
August 23.	DePaul Sanitarium Staff, 8 p. m.
August 24.	L. S. U. Faculty Club, 8 p. m.
August 27.	Board of Directors, Orleans Parish Medical Society, 8 p. m.
August 29.	Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
August 30.	Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.
August 31.	New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.

The July scientific meeting of the Orleans Parish Medical Society, which was held on July 9, was as follows: Legal Coagulation by Dr. Robert E. Farley, Dean, Law Department, Tulane University.

NEWS ITEMS

Dr. Edgar Hull attended a meeting of the Eighth District Medical Society in Alexandria June 4. Dr. Hull presented a paper entitled. "Errors in Diagnostic Philosophy."

Dr. F. L. Jaubert was re-elected president of the Louisiana Society for Crippled Children at the annual meeting of that organization recently held in New Orleans.

Dr. Roscoe L. Pullen received the alumni achievement award at Knox College commencement June 11. This award is given annually to the alumnus who has contributed most to humanity during the year. Dr. Pullen is the first physician among eight honored with the award.

Dr. Julius Lane Wilson recently attended a meeting of the American Trudeau Society in New York of which he is the retiring president.

Dr. Charles Gelbke was awarded the annual plaque for outstanding civic service on the Westbank, at the Ninth Annual Banquet of the Westbank Rotary Club held in the Gold Room of the Roosevelt Hotel June 19.

NEWS OF MEMBERS IN MILITARY SERVICE

Lt. Daniel W. Beacham is on detached service in Belgium after having served with the 231st General Hospital in Germany. He will rejoin his group in Germany shortly.

M. L. Stadiem has been promoted to Lieutenant Colonel. Lt. Col. Stadiem continues to be stationed at a General Hospital in England where he is the chief of a surgical service.

Commander James K. Stone is in command of a 200-bed civilian general hospital which has been set up in 26 quonset buildings on Guam. Commander Stone's staff includes 145 navy corpsmen, five native corpsmen and 22 native nurses.

MAX M. GREEN, M. D., Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

WALTER REED MEMORIAL MEDALS

It may be of interest to note that the Chairman of the Committee on Walter Reed Memorial, Dr. A. V. Friedrichs, has recently completed the design and purchased a supply of medals for the Walter Reed Memorial Fund. These medals will be distributed to the medical students of the Louisiana State University and Tulane University who have been selected to receive them, and a supply will be kept on hand for future use.

To the following men have been awarded the Walter Reed Memorial prize: William R. Whitehouse and Arthur L. Koven, 1942; S. A. Trufant III, 1943; Emile A. Bertucci, Jr., and Harry B. Caplan, 1944.

ANNIVERSARY OF THE ARMY MEDICAL DEPARTMENT

The Army Medical Department celebrated its 170th anniversary on July 27 this year with the realization that it has grown into the largest organization of the kind ever known and that it is giving this nation's army the best medical care that soldiers have ever received.

From its inception in 1775 shortly after General George Washington became Commander-in-Chief of the Continental Army until the present day, the Army Medical Department has made steady progress in military medicine, it has made scientific discoveries that have benefited all of mankind; but never has its progress in both of those categories been so rapid as in recent years.

The Honorable Robert P. Patterson, Under-Secretary of War, in a tribute to the work being done by the Medical Department under Major General Norman T. Kirk, the Surgeon General, recently said that no army at any time in history has achieved a record of recovery from wounds and freedom from disease comparable to that of the American Army in this war. Mr. Patterson said also that the Medical Department is attaining new records in almost every field of its endeavor. He cited the Army's record of saving nearly 97 of every 100 wounded soldiers who reach Army hospitals, the disease rate of less than one in one thousand, and similarly startling figures with reference to malaria, the dysenteries, and other diseases, showing that the Medical Department has established effective control on all disease fronts.

SOUTHERN BAPTIST HOSPITAL

The Clinical Staff Meeting of the Southern Baptist Hospital was held at 8:00 p. m. June 26, 1945.

The program for the evening was as follows: Case presentation: "Pneumonectomy for Bronchogenic Carcinoma" by Dr. Howard Mahorner; "Chronic Constrictive Pericarditis" by Dr. Maurice E. St. Martin; a motion picture: "Partial Pericardectomy and Epicardectomy for Calcified Constricting Pericardium," under the direction of Dr. Stuart W. Harrington of Rochester, Minn.

The death report which was discussed by Dr. Philip Tiller included six cases of carcinoma, three of which malignancies were present in the lung.

OCHSNER CLINIC STAFF MEETING

There was held a meeting of the Ochsner Clinic Staff members and fellows on Friday, July 27, 1945, at 8:30 p. m., in the reception room of the Ochsner Clinic. The program was as follows: "Conservative Treatment of Fractures of the Carposcaphoid," by Captain George D. Bercovitz, M. C., Station Hospital, New Orleans Port of Embarkation; "Supplementary Remarks on Metabolic Diseases of Bone," by Dr. William Parson, Department of Medicine, Ochsner Clinic; "Bone Repair," by Dr. Robert P. Howell, Fellow in Surgery, The Alton Ochsner Foundation.

EIGHTEENTH ANNIVERSARY ISSUE OF THE HEBREW MEDICAL JOURNAL

Volume I, 1945, eighteenth anniversary issue of the Harofe Haivri (The Hebrew Medical Journal), edited by Moses Einhorn, M. D., has just made its appearance. This special issue is dedicated to the late Henrietta Szold, distinguished humanist and Zionist, who harnessed American Jewish womanhood in a great organization, Hadassah, which is responsible for the vast network of medical and sanitary installations in Palestine, making it the outstanding health center of the whole of the Middle East.

ALVARENGA PRIZE

In recognition of his important work upon the various types of Rh factors and on their genetic transmission, the College of Physicians of Philadelphia awarded on July 14, 1945, the Alvarenga Prize for this year to Alexander S. Wiener. Dr. Wiener will give the Alvarenga lecture before the College of Physicians of Philadelphia and the Philadelphia County Medical Society on October 3, 1945, on "Rh Blood Factors in Clinical Medicine."

The Alvarenga Prize was established by the will of Pedro Francisco daCosta Alvarenga of Lisbon, Portugal, an Associate Fellow of the College of Physicians, "to be awarded annually by the College of Physicians on each anniversary of the death of the testator, July 14, 1883."

INFECTIOUS DISEASES IN LOUISIANA

For the week ending June 9 the following diseases, occurring in numbers greater than 10, were reported to the State Board of Health: Fifty-two cases of measles, 37 of malaria, 19 each of scarlet fever and of septic sore throat, 16 each of mumps and unclassified pneumonia, and 12 of pulmonary tuberculosis. One case of poliomyelitis was reported from Lafourche Parish and one case of smallpox from Madison Parish. Most of the cases of malaria were contracted within the continental United States. For the following week only five reportable diseases occurred in numbers more than 10, and except for pulmonary tuberculosis with 42 cases, the other cases were few in number, for example, 15 cases of hookworm infestation, 14 of scarlet fever, 12 of malaria, and 11 of mumps. This week there was a case of poliomyelitis reported from Caddo Parish and three cases of typhus fever reported from three different parishes. For the week closing June 23 pulmonary tuberculosis again led the list with 59 cases, followed by 57 of mumps, 22 of unclassified pneumonia, 16 of typhus fever, 15 of malaria, 12 of scarlet fever, and 10 of measles. The rather remarkably large number of typhus fever cases were scattered throughout the state, with the exception of eight which were found in Iberia Parish. Parenthetically, it might be noted that so far this year there have been more patients suffering from typhus fever than from typhoid fever. The last week in the month closing June 30 contained the statistics on the venereal diseases. These will be given first. There were reported 1,724 cases of gonorrhea, 1,195 of syphilis, 24 of chancroid, 16 of granuloma inguinale, and 17 of lymphopathia venereum. Of the non-venereal cases there was a perfectly surprising increase in the number of respiratory tract infections. One hundred and five cases of unclassified pneumonia were listed and 46 of pneumococcic pneumonia, neither of which disease has been reported in large numbers for some months. Another of the peculiarities of this present report is that 40 cases of rheumatic fever were also listed and 132 of cancer, neither of which disease has occurred in numbers greater than 10 for a long period of time. In addition the more common diseases included 64 cases of pulmonary tuberculosis, 49 of malaria, 46 of measles, 30 of septic sore throat, 14 of typhus fever, 13 of hookworm, and 10 each of mumps and German measles, as well as 11 cases of chickenpox. Referring again to the typhus fever cases, so far there have been listed 87 of these cases this year and only 63 cases of typhoid fever. Two cases of poliomyelitis were reported from Caddo Parish. The typhus fever cases were very well scattered throughout the different parishes in the state. Of the over 1,000 cases of syphilis that were reported this week only 189 of them were from military sources. Thirteen of the cases of malaria also were reported from this same source.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported that for the week ending June 16 there were 146 deaths in the city as contrasted with 128 the previous week. Of these 146 deaths, 81 were in the white people, 65 in the colored, and 15 were children under one year of age For the succeeding week which terminated June 23, the number of deaths fell to 134, proportioned 88 white, 46 non-white, and 10 in infants. The week which closed June 30 disclosed that there were 20 more deaths in the city than in the previous week. Of the 154 fatalities, 104 were white, 50 were colored, and 13 were in infants. The last week for which the reports were available showed that only 131 people succumbed to disease or accident in New Orleans. There was a decrease in both races, 86 white people dying and 45 colored, with only eight of the deaths being in children under one year of age. The number of deaths in New Orleans in contrast to the three-year average is much smaller for the year 1945 than the previous three years, and that in spite of the increase in population of the city.

NEWS ITEMS

Eli Lilly and Company has made a grant of $5,000 to the Alton Ochsner Medical Foundation for research. It is being used for the study of endocrine and metabolic diseases under the supervision of Dr. William Parson. Dr. Albert Segaloff, formerly of Vanderbilt University, will join the Foundation staff on August 1 and will have direct charge of the endocrine laboratory.

The American College of Radiology monthly news letter states that 10.6 million square feet of medical radiographic film has been allotted for civilian health service for the third quarter of 1945. This is practically enough film to meet the minimum requirements of civilian doctors in civilian hospitals.

The Leslie Dana Gold Medal, awarded annually for oustanding achievements in the prevention of blindness and the conservation of vision, will be presented this year to Dr. William Zentmayer of Philadelphia, it is announced by the National Society for the Prevention of Blindness.

HEALTH OF TROOPS HERE IS EXCELLENT

During this past winter and spring the health of troops stationed in the United States has been excellent, surpassing that of any previous war year. The low hospital admission rate for all diseases reflects fewer communicable conditions, as it is during this period of the year that infectious diseases usually predominate.

There were less respiratory diseases than in any previous war year, although during May there was a slight rise in these cases. Pneumonia, measles, scarlet fever, meningitis, and rheumatic fever were all less prevalent than during the winter and spring of 1944. The only important infectious diseases of which this was not true were venereal diseases and infectious hepatitis.

Relapses in the United States of malaria infections acquired in tropical areas overseas increased each month until March 1945, but have since declined slightly. With malaria control in all overseas areas now greatly improved, the number of relapse cases should continue to decrease.

The fact that most of our troops are well seasoned and there are fewer newly inducted troops is responsible in part for his improved health record. Most Army hospital beds here are now occupied by patients evacuated from overseas.

—From the Office of the Surgeon General, Technical Information Division, Washington, D. C.

CORRESPONDENCE

July 12, 1945
Camp Philadelphia
Near Rheims, France

Dear Doctor Musser:

I want to thank you and the society for sending the journal each month. I wonder if you know how much all the news really means to me.

You do not know me except as a name on your membership roster, therefore I should like to give you a little of my history.

1. I have been overseas since December, 1944; have spent my time in France, Belgium and Germany.

2. Our unit crossed the Rhine during the Ruhr Pocket fighting, went into Nordhausen during the Harz Mountain battle and finished at Halle where the fighting still continued for some days.

3. We really saw all of the atrocities at Nordhausen and at Weimar where the concentration camps were at their best.

4. We each have two battle stars, whether earned or not is another question.

5. I have been chief anesthetist of our unit for the past year and have had some interesting cases.

6. On March 16, 1945 the C. O. very graciously had me promoted to Captain, a rank I will probably hold for some time in the Pacific. There seems little hope for our return to the States.

I should like to state that Drs. P. H. Jones and Ansel Caine know me well. My hospital training was obtained at Charity and Southern Baptist at New Orleans.

Thanks again for the journal.

Sincerely,

T. C. Sherwood

DR. EDGAR LEE SANDERSON

(1878-1945)

One of our prominent Caddo Parish physicians died on June 8 in Shreveport. Dr. Sanderson graduated from Tulane in 1908 and promptly became a member of the State Medical Society, in which organization as well as in the Shreveport Medical Society he took an active interest up until the time of his death. He was a past president of this latter organization and served in the House of Delegates of the former. For six years he was the superintendent and chief surgeon of the Shreveport Charity Hospital. His many friends will miss this popular and well liked medical man.

DR. JOSEPH DENEGRE MARTIN

(1879-1945)

One of the outstanding otolaryngologists of the South, Dr. Joseph D. Martin, died at New Iberia on July 6, 1945 after a rather protracted illness. Dr. Martin was born in 1879 in Louisiana and spent a greater part of his active medical life in New Orleans. A few years ago on account of his health he moved to New Iberia where he continued to practice his specialty. A man of medical attainments, Dr. Martin was also a man of great personal attraction, cheerful and happy at all times. He was loved and respected by his patients, and was a great and loyal friend to all his doctor acquaintances.

DR. WILLIAM L. ATKINS

(1893-1945)

Dr. William L. Atkins, who died in Shreveport on June 16, was one of the most prominent eye, ear, nose and throat specialists in Northern Louisiana. He graduated from the University of Louisville in 1916 and became a member of the state society in 1920, and since that time took a relatively active part in organized medicine. Dr. Atkins was an outstanding practitioner of Shreveport whose untimely death will be mourned by a large number of patients and friends.

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BOOK REVIEWS

Internal Medicine, Its Theory and Practice: Edited by John H. Musser, B. S., M. D., F. A. C. P. Ed. 4, Philadelphia, Lea & Febiger, 1945. Pp. 1518. Price $10.00.

This textbook has been so completely satisfactory from the beginning that no reviewer should do more than call attention to a new edition. The editor points out that many of the chapters have been extensively revised and that, despite numerous deletions, the size of the book has grown to approximately 1500 pages. The list of contributors is sufficient evidence for the quality of the contents.

The infectious diseases, now so prominent for obvious reasons, are covered by such authorities as Reimann, Kinsella, Pepper, Spink, Chesney, Craig, Faust and others. The uses of penicillin and the sulfonamides are described in detail. Disorders of the heart, kidney and blood vessels are discussed by F. M. Smith, W. S. McCann and E. V. Allen. A. L. Bloomfield wrote the chapter on gastro-intestinal diseases, James Alexander Miller that on the respiratory tract and Robert A. Cooke the section on allergy. J. H. Means and Fuller Allbright collaborated on the endocrine systems; C. C. Sturgis and E. B. Krumbhaar covered the hematopoetic organs; Kerr and Mettier the diseases of the locomotor system; and Strecker and Wilson the nervous system. Nutritional disorders are described by Musser and Goldsmith, metabolic disturbances by Wilder and Sprague, and short chapters on toxic disorders have been contributed by Barr and Pincoffs.

It is difficult to see how a more useful reference work could be constructed.

Thomas Findley, M. D.

Anatomy: By Donald Mainland, M. B., Ch. B., D. Sc. New York, Paul B. Hoeber, Inc., 1945, pp. xvii plus 863, figs. 61. Price $7.50.

This volume is published in the *Medical Students Series*, which aims toward the making of "books which present by sound teaching technics the basic foundations of their subjects, omitting non-essentials which the student has not time to cover." (Editor's preface.) The author, Professor of Anatomy at Dalhousie University, explains that the book is the outgrowth of a philosophy and practice of teaching which has been tested in his own classes. Some readers will recall Dr. Mainland's thoughtful articles on the functions of anatomy in medical education and the mechanics of teaching the subject. His text is based upon the principles set forth in those articles, which are here re-emphasized both in direct statement and by their embodiment in the makeup of the book. The cardinal note of the author's viewpoint is the belief that the chief function of the undergraduate course "is to help students to learn how to educate themselves." He strives to accomplish that purpose while at the same time guiding the students into a knowledge of anatomy.

Mainland's *Anatomy* is a text-book quite different from any other in the field. One distinction is its small bulk. However, as the author states, "this book could not justifiably be entitled 'Anatomy Made Easy.' On the contrary, anyone who uses it must work hard and think hard, not only because it is condensed, but because it contains ideas and problems as well as facts." The text is presented in three main parts. Part I (26 pages) deals with the aims and methods of anatomy. Part II (127 pages) gives an over-all view of anatomy: the body as a whole, with emphasis on variation; bones; joints, muscles and fasciae; blood vessels and lymphatic system; nerves; skin and appendages. Part III (589 pages) is devoted to regional anatomy, with successive sections on upper limb, lower limb, thorax, etc. Seven appendices (47 pages) are devoted to as many topics: observations on fresh mammalian cadavers; radiology; reading and writing; postnatal ossification of limbs; normal weights of organs; tooth eruption dates; adult pelvic dimensions; segmental cutaneous nerve supply. Questions are inserted throughout the text, to provoke thought and to illustrate clinical applications; answers to these questions are listed in the back of the book. There is a list of references to literature (38 pages), separated by chapters. These references are cited in the text. The book is designed for use in conjunction with an atlas and illustration is accordingly restricted.

Harold Cummins, Ph. D.

Operations of General Surgery: By Thomas G. Orr. Philadelphia, W. B. Saunders Company, first edition, 1944. Pp. 723 with 1396 step-by-step illustrations on 570 figures. Price $10.00.

This book is written primarily to acquaint the general surgeon with the essentials of surgical technic in general surgery which have proved satisfactory to the author. Attempt has been made to bring out the important fundamentals in surgery. A brief outline of each procedure is given and illustrated when possible.

The reviewer thinks that this is not a text for a beginner in surgery but may have a definite place in the surgeon's library for brief reviews, as in general the author has given a rather concise but comprehensive and up-to-date description of the practical procedures used in general surgery.

Reynold Patzer, M. D.

Intracranial Arterial Aneurysms: By Walter E. Dandy. Ithaca, New York, Comstock Publishing Company, Inc., 1944. Pp. 147. Price $2.50.

This monograph, based on Dr. Dandy's experiences in 108 patients with 133 aneurysms, provides a complete dissertation on the surgical aspect of the little known condition, intracranial arterial aneurysms. The introductory chapter, containing a general review of the incidence, types, symptomatology and diagnostic procedures, is followed, in the next chapter, by a discussion of the cases according to an anatomic classification. In the third chapter, written by Dr. Dorcas Hager Padget, the embryology and anatomy of the circle of Willis are described. The last two chapters are devoted to a discussion of the preoperative and operative treatment of cases and the results obtained; in 64 aneurysms treated surgically 20 cures were effected.

Graphic and ample illustrations punctuate the discussion. Detailed tabular information on the series of cases and an exhaustive bibliography are appended. The general surgeon will find this contribution useful as a reference work and the neurosurgeon will want to add a copy to his bookshelf.

Dean H. Echols, M. D.

Pathology of Internal Diseases: By William Boyd, M. D., F. R. C. P., F. R. S. C. Lea & Febiger, Philadelphia. 4th ed., thoroughly revised, published December, 1944. Octavo, 857 pages, illustrated with 366 engravings and 8 colored plates. Price $10.00.

The fourth edition of this very popular textbook has undergone rather extensive revision. Dr. Boyd has added to and enlarged his discussion of many new diseases which have come to the front in the past few years. In spite of these additions he has succeeded in reducing the size of the book from the previous editions, a testimonial to his quality of writing which characterizes this work. This book will continue to be one of the most outstanding textbooks of pathology available to the physician.

Roscoe L. Pullen, M. D.

Physiology in Health and Disease: By Carl J. Wiggers, M. D., D. Sc., F. A. C. P. Lea & Febiger, 1944. 4th ed., thoroughly revised. Price $10.00.

Dr. Wiggers is to be commended for having made a most thorough revision of his textbook at this time. Much of the text has been rewritten, some old material deleted and considerable new material has been added relating particularly to "war physiology." There are, thus, several new chapters on aviation physiology and discussions of the more recent work on acclimatization, blood transfusion and shock. The references to original articles, monographs and reviews have also been brought up to date and represent a very valuable supplement to the text material. Many new figures have been introduced and some of the poorer ones of previous editions replaced with better illustrations. As in the previous editions, the physiology of the circulation, which is Dr. Wiggers' special field of interest, is particularly well handled. The text, as it is now constituted, is the most "modern" of the available books on physiology and certainly among the best.

H. S. Mayerson, M. D.

Principles and Practice of Surgery: By W. Wayne Babcock, M. D. Philadelphia, Lea & Febiger, 3rd edition, 1944, pp. 1331. 1141 illustrations and 8 colored plates. Price $12.00.

This newly revised and rearranged textbook of surgery is written by thirty-seven different authors, each a specialist in his own field. Care has been taken to avoid duplications with the use of the cross reference and index. Conflicting opinions have been ironed out by discussion. Particular attention has been given to very recent advances in surgery, including those of the war. The majority of chapters are quite complete, concise and well illustrated. It can be recommended to students and practitioners alike as a practical book of easy reference. It is well up-to-date in regard to new discoveries, diagnoses, and treatment. Each chapter is accompanied by a very extensive bibliography.

Reynold Patzer, M. D.

PUBLICATIONS RECEIVED

Lea & Febiger, Philadelphia: Refraction of the Eye, by Alfred Cowan, M. D.

Charles C. Thomas, Springfield, Ill.: A Bibliography of Visual Literature, 1939-1944, compiled by John F. Fulton, Phebe M. Hoff and Henrietta T. Perkins. Pulmonary Tuberculosis in the Adult, by Max Pinner, M. D.

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RUPTURED UTERI: AN ANALYTICAL REPORT OF SIXTY-FOUR CASES MANAGED AT THE CHARITY HOSPITAL OF LOUISIANA AT NEW ORLEANS WITH A REVIEW OF THE LITERATURE*

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Monroe

Since Guillemeau[1] (1550-1613) first described rupture of the uterus, many accounts of this distressingly serious obstetric accident have found their way into print. Doubtless this condition claimed the lives of many women long before it was recognized as a clinical entity, and we dare say that numerous have been the times that the cause of death has been recorded as "childbirth," "childbed fever," "postpartal hemorrhage," and the like, whereas it should have been *rupture of the uterus.*

Our interest in this subject was initiated when we saw a case as students, and we became markedly interested during the first year of our residency in obstetrics and gynecology, during which time nine such cases were managed in the Charity Hospital of Louisiana at New Orleans. We have perused the available literature on this grave obstetric complication and have studied the records of all cases of ruptured uteri treated in Charity Hospital since 1912. When this study was undertaken we received the encouragement of the chiefs of the obstetrical services of Tulane University, the Louisiana State University, and the Independent Unit. Again, we express our appreciation to them and to the members of their staffs for permitting us to report the cases which have been treated on their respective services.

INCIDENCE

Obviously, statistics regarding the incidence of uterine rupture are difficult to compile; nevertheless, we do know that the frequency is conspicuously higher in localities where pelvic deformities predominate. One must also take into account an undoubtedly large number of fatal cases of rupture which pass unrecognized, with the patient succumbing due to shock, peritonitis, or the like. Furthermore, hospital figures serve only as an index to the general frequency of the accident, because complicated and mismanaged labors gravitate chiefly to institutional practice. Sheldon[2] states, "Fourteen of twenty-six cases of uterine rupture occurring in the Boston Lying-In Hospital from January, 1918, to January, 1935, were emergency cases and cannot be charged against the hospital clinic." Forty-five of the sixty-four cases in the New Orleans Charity Hospital series were classified as emergencies at the time of admittance.

Individual reports as to incidence vary from one in 250 labors (Tauffer[3]) to one in 6,124 labors (Ramsbotham[4]). In 1875, Bandl[5] reported a frequency of 1:1200; and five years later Harris[6] gave as his ratio 1:4000. Referring to cesareanized cases in

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Incidence of Uterine Rupture as Reported by Various Authors

Institution Author	*No Rupt.*	*No Deliveries*	*Ratio of Incidence*
Moscow Maternity Clinic Moscow Russia (1877-1901) *Ivanoff*[13]	124	118,581	1:956
Kasr El-Ainy Hospital Kitchener's Memorial and Coptic Hospitals Cairo, Egypt (1903-1931) *N P Mahfouz*[14]	110		1:3500*
New York Lying-In Hospital (1909-Sept 1926) *Asa B Davis*[15]	106	86,648	1:817
New York Lying-In Hospital (1890-1909) *Ralph Waldo Lobenstine*[16]	78	60,977	1:781
Maternity Hospital Bucharest, Rumania *Cristeanu & Draghiesco*[17]	77	23,016	1:300
Charity Hospital of Louisiana New Orleans Louisiana (Jan., 1913-Jan. 1941)	64	57,144	1:892
Philippine Is Gen. Hospital (1910-1933) *B. Roxas, A. Baens,* *J.R. Katigbak*[18]	56	34,447	1:636
Koenigsberg Clinic Germany (1910-1929) *K. Sachs*[19]	36	20,800	1:577
Rotunda Hospital** Dublin Ireland	34	57,412	1:1689
Los Angeles County Hospital California (1923-April, 1934) *I G McNeile* *R D. McBurney*[20]	30	17,350	1:578
Boston Lying-In Hospital (1918-1934) *C P Sheldon*[21]	26	47,554	1:1829
Maternity Hospital Rivadavia (& Inst of Maternity) Buenos Aires Argentina (1920-1935) *F Bazan* *FAU Imaz*[22]	21	27,500	1:1309
Woman's Hospital New York *R A Hurd*[23]	9	17,500	1:1944
Royal Maternity Charity of London (1827-1856) *Ramsbotham*[4]	8	48,996	1:6124
Toronto General Hospital (1906-1916) *W.A Scott*[24]	6	3,973	1:662

**Estimated by Mahfouz as the general incidence in Egypt.*
***Cited by P.B. Bland and L Goldstein in Davis' Gynecology & Obstetrics. Vol. 1, Chapter XIX, p 4, 1938.*

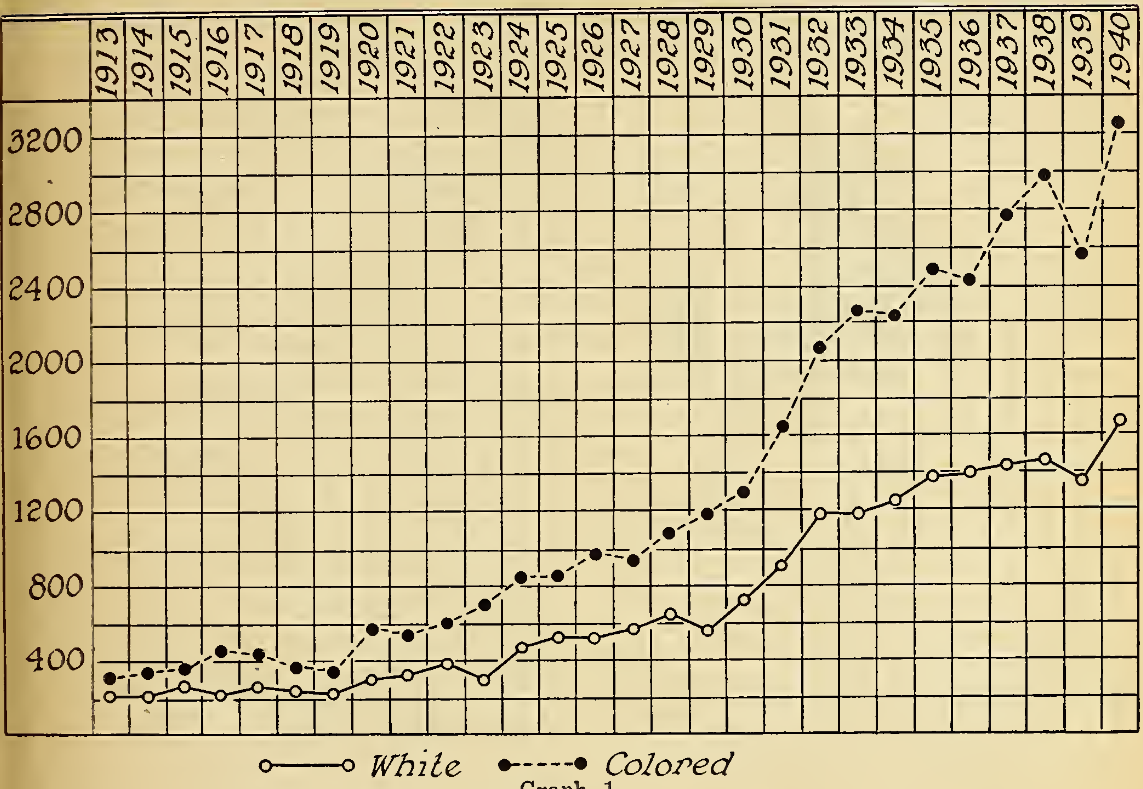
Table 1.

1886, Krükenberg[7] declared that after the old operation 50 per cent of all cases resulted in rupture of the uterus during subsequent pregnancies. He reported 20 cases of rupture through the scar, with a mortality of 50 per cent. Leopold[8] (1889) gave an incidence of 1:6100. Freund[9], in 1890, studied the statistics of 17 investigators, arriving at an average of 1:2114. Koblanch[10] (1895) reported 1:462 and Winckel[11] in his 1905 *Handbuch* wrote that the frequency was one in 666 deliveries. In 1914, Rongy[12] concluded that 3 per cent of all cesareanized women are destined to have a ruptured scar with a mortality of 50 per cent. Table 1 shows the ratio of incidence as reported by Ivanoff,[13] Mahfouz,[14] A. B. Davis,[15] Lobenstine,[16] Cristeanu and Draghiesco,[17] Roxas and Katigbak,[18] Sachs,[19] McNeile and McBurney,[20] Sheldon,[21] Bazan and Imaz,[22] Hurd,[23] and Scott.[24]

MECHANISM OF RUPTURE

Due credit must be given to Guillemeau,[1] Baudelocque,[25] Schröder,[26] V. Winckel,[27] Michaelis,[28] and Braune[29] for the foundation of our knowledge of this subject. However, the modern history of rupture of the uterus is based upon the work of Bandl,[30] who first pointed out the difference in function of the upper and lower uterine segments and discussed the clinical significance of the contraction ring in his writings on the "Lower Uterine Segment" in 1875 and 1876. In order to comprehend correctly rupture of the uterus during labor, one must bear in mind the anatomic features of the uterus, and especially of the development of the lower segment. The latter has been the subject of numerous contributions to the literature since the time of Bandl,[30] and today it is generally agreed that it is formed from the isthmus rather than from the corpus or cervix uteri. Munro Kerr[31] states that Stieve's "papers on the subject explain very clearly the features of this specialized area and how early in pregnancy (sixth to eighth week) its walls fold outwards and its cavity merges into the general cavity of the body proper of the uterus." The mechanism of rupture is explained on the basis of excessive retraction of the upper segment with corresponding thinning and attenuation of the lower seg-

Total Annual Deliveries Compared Racially ~
January 1913 to January 1941



Graph 1.

ment in tonic contraction. The upper segment is then stimulated to even more violent activity, and finally thinning has reached such a degree that even the slightest extra strain will result in rupture of the lower uterine segment. This may occur spontaneously or be brought about by outside interference in the form of manual intervention, instrumentation, or the administration of oxytocics.

Parity, Color, and Maternal Deaths

Para	O	I	II	III	IV	V	VI	VII	VIII	IX	X	XII	?	Total
White	2	5	4	2	1	2	1	2	1	0	1	0	8	29
Deaths	2	3	2	1	0	0	0	1	0	0	1	0	5	15
Colored	5	4	5	2	5	3	2	1	2	2	0	1	3	35
Deaths	4	1	5	0	3	2	2	1	1	2	0	1	2	24

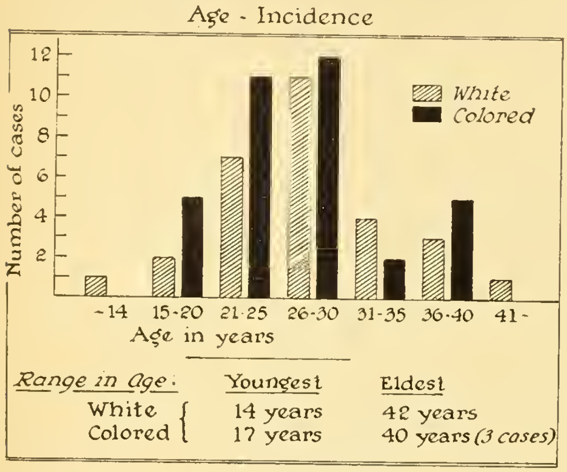
Mortality: 60.93% W-51.77% C: 68.57%

Table 2.

ETIOLOGY

Gravidity: Etiologic factors leading to rupture of the uterus during pregnancy include anything which may weaken the uterine wall. One of these is multiparity. DeLee[33] stated that the occurrence is about eight times more frequent in multiparae than in primiparae, being "due to structural changes, the weakness of the muscular fibers, the scars and inflammations, the residues from previous labors." In this series there were only seven primigravidae, as shown by table 2. Trask[32] found 31 primigravidae in a collected series of 417 cases of ruptured uteri. Of his 78 cases, Lobenstine[16] stated that 23, including 18 "incomplete ruptures," were in primiparae. In the subsequent New York Lying-In series of 106 cases, Asa Davis[15] reported only eight primiparae. Sheldon[21] found only two primiparae in the Boston Lying-In Hospital series of 26 cases. Mahfouz[14] calculated a ratio of 15 multiparae to one primipara in 110 cases. McNeile and McBurney[20] list only one primigravida in 31 uterine ruptures at the Los Angeles County Hospital.

Age: Trask[32] found the largest number of uterine ruptures at the age of 30. He cites one woman who was 47 years old. DeLee[33] listed the years from 30 to 40 as being those of greatest incidence. McNeile and McBurney[20] state in their article that "there was no predominating age group." Their youngest patient was 20 years and their eldest 41 years of age. Graph 2 shows a predominance in the age group from 26 to 30. The youngest case was 14 and the eldest 42 years.



Range in Age:	Youngest	Eldest
White	14 years	42 years
Colored	17 years	40 years (3 cases)

Graph 2.

PREDISPOSING FACTORS INCIDENT TO THE UTERUS, FETUS, AND PELVIS

1. *Causes Due to the Uterus*

a. *Uterine Cicatrices*: Injuries of the uterine musculature resulting in scar formation is one of the major predisposing conditions to rupture of the uterus. In the New Orleans Charity Hospital series it will be noted that 17 of the cases had been previously cesareanized. The results of the studies on uterine wound healing by Mason and Williams[34] are well known. They proved that a firmly united scar is even stronger than the uterine muscle, confirming the clinical observations of Schauta,[35] who stated in 1906 that with the modern closure of the wound rupture is more likely to occur outside of the scar. As early as 1904, Van Leuven[36] collected 32 cesareanized cases who subsequently delivered spontaneously without any untoward effects. Since then many much larger series have appeared in the literature, refuting the old adage, "Once a cesarean always a cesarean." However, in this connection it is well to mention the mere fact that a woman who has delivered by the natural passages following a cesarean section does not necessarily mean that she is immune to rupture during subsequent pregnancy. Case No. 50 was subjected to laparotrachelotomy at Charity Hospital in 1935 for "abruptio placentae." Almost two years later she had a "normal" delivery at the same institution, and in 1938 her uterus ruptured spontaneously at term. Operation proved the rupture to be at the site of the low section. Another case, No. 52, was sectioned at a New Orleans hospital for "twins," a classical operation being done. A year later a laparotrachelotomy was performed after "prolonged hard labor." In 1920, the following year, a premature dead fetus was born. In 1924, she delivered a "normal eight-pound baby after a very hard labor," being attended by a midwife. Three years subsequently another low cesarean section was required, and in 1938 she came to Charity Hospital with an impending rupture of the uterus. Actual rupture in progress was seen upon laparotomizing her, the site being in the fundus where the first section was done. Steinke,[37] Ford,[38] Acosta-Sisson,[39] Fava,[40] and Casagrande[41] each report a case of normal delivery occurring in the interim between cesaerean section and rupture. C. H. Davis,[42] Holland,[43] and Thornhill[44] report one case each of a forceps delivery of a living infant in the interval between cesareanization and rupture. Yates and Rezanke[45] and Lazard[46] discuss two spontaneous deliveries following cesarean operation with rupture occurring during the third pregnancy after the section. Both of their cases were at term. McNeile and McBurney[20] report a case of a patient who was sectioned at term and who subsequently had four spontaneous deliveries and a bag induction of labor for eclampsia. Her uterus ruptured spontaneously at the sixth month of the seventh pregnancy. In the literature there are many cases of repeated rupture of the uterus. Case No. 15, previously reported by Gelpi,[47] had a second rupture within a year after her first rupture, following cesarean section, was sutured. Similar cases have been reported by Engels,[48] and Cornell.[49] In 1848, Trask,[32] an American, collected three cases with a second rupture of the uterus, and Becker,[50] a German writing in 1912, reported one such case of his own and a collection of 27. Maljawinsky,[51] at the Second Moscow Woman's Clinic, discussed a similar case in 1934. Mikhine,[52] writing in a French journal, in 1902, found records of 13 patients with a second rupture, of whom at least six died. He cited Battlehner as experiencing three consecutive ruptures in one woman, and Rose noted the occurrence of four ruptures in one patient.

Although Krükenberg[7] stated in 1886 that he believed that fully 50 per cent of sectioned uteri ruptured during subsequent pregnancies, Sänger,[53] in an 1895 report, presented a collected series of 500 cases without a single rupture. This marked contrast was attributed to the improved technic of suturing introduced by Sänger in 1882. From 1895 to 1908, 20 cases of ruptured cesarean scars were collected by Brodhead,[54] whose elucidative article appeared in the *American Journal of Obstetrics* (1908). Wyss,[55] writing in 1912, attributed the increase in the number of ruptures not to the growing popularity of cesarean section but to departure from the method of Sänger. In 1916, Palmer Findley[56] tabulated 63 cases, including the 20 presented eight years earlier by Brodhead.[54] He included the case of rupture after two cesarean sections reported by Lobenstine[57] in 1908, as did Brodhead; but he did not mention the three cases of ruptured sectional scars which were reported by Lobenstine[16] in 1909, or the case of C. H. Davis[42] reported in 1913. Writing in the same year as Findley,[56] Bell[58] reported a case stating, "From the literature available in the library of the Wayne County Medical Society and the Medical Library of the University of Michigan, I have been able to find seventy-eight cases recorded, my own case making seventy-nine. This included the sixty-three cases tabulated in the very exhaustive paper on this subject in the *American Journal of Obstetrics*, by our esteemed Fellow, Dr. Palmer Findley." As to whether he included the cases of Lobenstine[16] and C. H. Davis[42] we are at a loss to know, due to the fact that cases were not tabulated and no references were given. In 1933, LaMariana[59] reviewed the literature on rupture of the cesarean scar during pregnancy and labor, finding 96 cases subsequent to Bell's[58] report and prior to 1933.

A consideration of predisposing factors and contributing causes of rupture in sectioned cases is in order. Of these we consider the improper healing of the uterine incision as being the most important. In this connection, let us consider location of the incision, infection in the uterine wound, technic of suture and the material used, and location of the placenta.

Location of the Incision: The transverse fundal incision introduced by Fritsch[60] in 1897 soon became discarded. Writing in 1912, Wyss[55] remarked that the transverse fundal incision had not lessened the danger of rupture. Scheffzek[61] voiced the opinion that the unusual tissue distortion in the fundus during puerperal involution makes firm union of the scar problematical. Couvelaire[62] found 17 fundal cases in his report of 50 ruptured scars. Vogt[63] (1911) reported six fundal scar ruptures, and quoted Kuster as having had no rupture in a group of 100 cesareans, Leopold[8] none in 232, and mentions Sänger's[53] collection of 500 cases without a rupture. He concluded that rupture of the extraperitoneal operation scar is rare.

Study of the literature reveals the striking fact that rupture of low section scars is quite rare. As already mentioned, case No. 50 had a laparotrachelotomy followed by a normal delivery and a year later by rupture of the scar at term. We have been unable to find a similar case in the literature. Alice Maxwell,[64] Wetterwald,[65] and Casagrande[41] report one case each of rupture of a low section scar during the next subsequent pregnancy. Wetterwald,[65] in an article in 1926 on the obstetric future of women after low transperitoneal cesarean section, stated that the literature records only 10 ruptures in the cicatrix in 3,600 cesarean sections by this method (0.28 per cent). He found that 45 out of 100 patients cesareanized by the low section technic became pregnant. In 13 cases the operation was repeated, and the old scar was almost invisible. In the other cases childbirth occurred by the natural route. After high cesarean section, he believes that 25 per cent will rupture in subsequent deliveries. Writing in 1936, Fournier and Estienne[201] reported a case of rupture of the scar during labor following a cervical cesarean section, and stated that Bonnet, in 1934, was able to collect 37 such cases from the literature.

Infection in the Uterine Wound: Infection undoubtedly accounts for the weakness of an untold number of section scars. In many of the cases reported this fact has been emphasized, especially in those of Wyder,[66] Schutte,[67] Myer,[68] Van Buren,[69] Stevens,[70] Hillis,[71] Rickards,[72] Tottenham,[73] and Brandt.[74] LeDoux,[75] Warren,[76] and others report an instance of complete separation postoperatively of the uterine wound attributed to infection. Prine[77] reports a case of utero-abdominal fistula following section. A febrile postsectional convalescence may be considered indicative of uterine wound infection if all other causes of fever are eliminated in the particular case under observation; however, even though the patient is free of fever after operation we cannot then be absolutely certain that there has been no infection in the uterus. As Findley[56] stated, "there is no positive assurance of obtaining a perfect wound healing whatever the method of suture or whoever the surgeon. The uterine scar is an unknown factor in all cases." Hilliard E. Miller[78] has very aptly written, "The deaths from rupture of the uterus after cesarean section of course carry their own lesson, that when a woman has once been delivered abdominally, her life is in jeopardy in all future pregnancies unless the utmost watchfulness is practiced throughout her pregnancy and labor."

Technic of Suture: The exact technic of Sänger[53] has not been followed for many years, but the essential principles of his method of suture have been generally observed. It is justifiable to assume that marked deviations from his teachings have been responsible for a number of ruptures. These well-known rules include tier suturing, exclusion of the decidua in the sutures, infolding of the serosa, and the tying of sutures snugly without too much pressure. If these conditions are maintained and the wound heals in its entirety by primary intention, one can be assured that the uterine wall is no weaker during subsequent pregnancy than it was prior to the cesarean section.

There has been much controversy regarding the suture material for closure of the uterine incision. Holland[43] noted in a collected series of 97 cases (including five of his own) of ruptured cesarean scar that of the 53 cases in which the material for the deep sutures was mentioned, catgut was employed in 41, and silk in 12. He declared, "It would be false reasoning to conclude from these figures that rupture is more liable to occur after catgut than after silk." According to him, prior to 1910 the use of silk was far more predominant than the use of catgut in Great Britain. Since then the reverse is true. Writing in 1920, he stated that the literature showed that the American and German operators greatly preferred catgut, whereas silk was still the choice of the French. At that time he personally advocated the use of silkworm gut for the deep sutures, stating that oftimes the catgut was too quickly absorbed, especially in infected cases, and that silk and linen favor suppuration and may lead to fistula formation. Since then the quality of catgut has been greatly improved. Following the teaching of E. L. King,[79] we presently favor the employment of No. 1 chromic catgut, using a continuous suture for approximation of the inner third of the myometrium extending down to but not through the endometrium, a second layer of figure-of-eight sutures or a continuous suture in the outer two-thirds of the uterine musculature, and a continuous Lembert suture closing the uterine fascia. In instances of a transverse cervical incision two tiers of sutures suffice. A suture of OO plain catgut is employed for peritonealization utilizing the vesicouterine fold. In infected or potentially infected cases, interrupted su-

Type of Rupture in Cases without Previous Cesarean Section - Group A

	White			Colored		
	Cases	Maternal Deaths	Fetal Deaths	Cases	Maternal Deaths	Fetal Deaths
Spontaneous	7	5	5	10	7	7
Traumatic	8	5	4	18	16	17
Pituitary extract alone	1	0	1	1	0	1
Pituitary extract with attempted forceps	1	0	1	0	0	0
Pituitary extract with version and extraction	0	0	0	3	3	3
Pituitary extract with forceps and attempted craniotomy	0	0	0	1	1	1
Forceps alone	4	3	0	5	5	4
Forceps with craniotomy	0	0	0	2	2	2
Bag alone	0	0	0	1	1	1
Manual dilatation cervix alone	0	0	0	1	1	1
Bag with version and extraction	1	1	1	0	0	0
Version and extraction	1	1	1	2	1	2
Attempted version (Bandl's Ring)	0	0	0	1	1	1
Breech extraction	0	0	0	1	1	1

N.B. Case #40, white, was 24 days postpartal after a "normal" delivery. She was examined under anesthetic because of continued bleeding. Rupture was found; patient was hysterectomized.

Case #8, white, was 41 days postpartal after a forceps delivery. She was diagnosed incomplete rupture.

No history as to type of rupture in cases 11 (W) and 21 (C).

Table 3.

tures are used throughout the procedure. As a result of the enthusiasm of Conrad Collins, many of the gynecologic cases on the Tulane service have been given the benefit of cotton sutures, and we have employed such material in a series of sectioned individuals. Although we are keenly interested in various suture materials, we still believe that proper wound healing depends more upon the method of suturing than upon the material employed, a thought expressed by Olshausen[80] and Bumm[81] over a quarter-century ago.

Placental Site: It is the general consensus that placental implantation at the site of cesarean scars may predispose to uterine rupture as the result of the erosive action of chorionic villi. In the 97 cases discussed by Holland,[43] mention of the placental site was made in 51. Of these it was implanted over the scar in 34. He believes that too much importance has been attached to the location of the placenta. Nevertheless, it must be admitted that if there is any tendency toward weakness of the uterine scar it will be rendered more vulnerable by the presence of the placenta. This, in itself, is a point definitely in favor of the low type section. Marinacci[82] described the cesareanized case of a patient who, in the latter months of her next pregnancy, developed a severe intestinal hemorrhage. Laparotomy disclosed a loop of bowel adherent to the site of the cesarean incision with invasion of the gut wall by the destructive action of the chorionic villi, giving rise to the bleeding, which preceded by several days the slow rupture of the uterus.

Effect of Repeated Cesarean Section: Very very few authors advocate sterilization after the first section. A few recommend same after the second operation, notably Jardine and Opitz[83]; and many obstetricians believe that it should certainly be performed after the third. Obviously, this is a matter which should be left to the decision of the wife and husband after giving them the benefit of all the facts in the case. There are numerous cases on record of individuals who have been subjected to several cesarean sections, and Asa B. Davis had a patient upon whom seven were performed. In 1934, Phaneuf[84] reported two patients of his, each of whom had six cesarean sections. Paul Titus,[85] in his book on *Management of Obstetric Difficulties*, wrote, "The greatest number that I have done on one patient is five." In *Berkeley's*[86] *Midwifery* we find "Cesarean section can be repeated indefinitely, it has been done nine times on the same woman, and the risk when performed under proper conditions is no greater than at the first operation." Munro Kerr[87] in his *Operative Obstetrics* in reply to Rivett,[88] who stated he had operated upon one patient for the fifth time and "had always hoped to do 10 cesarean sections on the same patient," declared, "I wonder if the patient has the same desire to establish a record!" He continues, "I certainly think that a patient who has been subjected to cesarean section on two to four occasions has done nobly by her family and by the state. No matter how safe the repeat operation (lower segment) may be, on every occasion there is risk. After all, she is of more value to her family alive with three or four children than dead with 10 children to her credit."

Type of Rupture in Previously Sectioned Cases
Group B

	White			Colored		
	Cases	Maternal Deaths	Fetal Deaths	Cases	Maternal Deaths	Fetal Deaths
Spontaneous	10	4	8	6	1	5
Type of Section						
a Classical	9			5		
b Laparotrachelotomy				1		
c Both Classical and Low	1					
This patient had 1 Classical and 2 Low Sections						
Traumatic						
Pituitary Extract alone	1	0	1	0	0	0

Table 4.

In this connection it is interesting to note that Heffernan[89] and Bailey[90] reported one case each of uterine rupture occurring after the third cesarean section. There are numerous instances of rupture after a second operation, including the cases of Kickham,[91] Tait,[92] Mackenzie,[93] Lester,[94] Fournier,[95] Lobenstine,[57] Hanson,[96] McNeile and McBurney,[20] Warren,[76] Fitzgibbon et al.[97] Cases Nos. 52 and 33 in the Charity Hospital series had three and two sections respectively, before rupture occurred.

Rupture of the Uterus After Myomectomy: This occurrence is extremely rare. In this hospital many women have been myomectomized before and during pregnancy, without any known instances of rupture. A few years ago we removed a degenerating fibroid from the uterus of a Negress who was three months' pregnant. Her case was followed closely and she was delivered of twins at term without difficulty. In discussing uterine rupture after myomectomy, Munro Kerr,[96] in 1937, said, "I have never observed it, nor do I know of any colleague who has witnessed its occurrence." He mentions Tesauro,[99] who recorded a case and reviewed the literature in 1932. He emphasizes the fact that Tesauro's paper deals chiefly with the danger of rupture in subsequent pregnancy, and declared, "I have not come across a recorded case of rupture of the uterus in a pregnancy which continued subsequent to myomectomy." Mahfouz[14] states that he has never seen a case of rupture following myomectomy and declares that he has personally delivered 10 patients who have become pregnant after myomectomy. Fink[100] reports the case of a person who was subjected to a myomectomy during her third pregnancy and who later fell down some stairs with a resultant rupture of the uterus into the bladder causing gross hematuria. M. Goulliod[101] states that Döderlein encountered one rupture following myomectomy. In 1933, Hurd[23] wrote about a case of rupture at the site of an old myomectomy following breech extraction.

R. R. Kahle[102] cites a case of ruptured uterus at term following a hysterotomy which had been done 18 months previously for removal of retained secundines. Rosenfeld[103] reports an instance of uterine rupture at the fourth month which occurred in the fundus at the site where a wedge-shaped resection had been performed four years previously.

Any instrumentation, manipulation, or infection which results in permanent weakness of the uterine wall must be considered as a predisposing factor. Long,[104] in 1914, pointed out that the foundation for uterine rupture often dates back to some remote illness or operation, the significance of which is not appreciated at the time of impending rupture. Baisch,[105] in his collected series of 79 cases of uterine rupture during pregnancy, found that 31 cases occurred during the first five months of pregnancy, and in these the uterine wall was diseased. Scar tissue was usually found in cases occurring after the fifth month. He presented much data to bear out the theory that one of the main factors determining rupture during pregnancy is previous injury of the uterine wall. Riddel[106] agrees with this contention. He stresses the role played by multiparity, previous injury, infection, and chronic metritis in causing rupture of the uterus before the onset of labor. Banks[107] and Kane[108] report a case of spontaneous rupture at six and one-half

Record of Presentation, Position, Cervical Dilatation; and Location of the Fetus and Placenta after Rupture -					*Fetus and placenta delivered*	*Fetus delivered placenta in uterus*	*Fetus and placenta in uterus*	*Fetal head and placenta in uterus*	*Fetus in abdomen, placenta in uterus*	*Placento in abdomen, fetus in uterus*	*Fetus and placenta in abdomen*
		Presentation	*Position*	*Dilatation of Cervix*							
Spontaneous	Group A-17 W-7, C-10	Vertex-8 Transverse-1	LOA 3 LOT 2 ROP 3	Compl. 8 Incompl 3	1	0	4	3	5	0	3
	Group B-16 W-9, C-7	Vertex-5 Breech-1	LOA 4 ROA 1	Compl. 1 Incompl. 4	4	0	0	6	0	2	8
Traumatic	Group A-28 W-10, C-18	Vertex-18 Breech-1 Transverse-2 Compound-1	LOA 6 LOT 1 ROA 3 ROP 2	Compl. 14 Incompl. 5	16	1	5	0	2	1	2
	Group B-1 W-1	Vertex ?		Incompl. 1	0	0	1	0	0	0	0

Table 5.

months and six months, respectively, which they attribute to the effects of infection following abortion. Lawson and Gordon[109] and Lloyd and Ganner[110] discuss spontaneous rupture in multiparae attributed to chronic metritis. Masson[111] describes a case of impending rupture at the cornual end three years after applications of radium (1392 mg. hrs.).

b. *Malposition of Uterus*: This is a potential predisposing cause. Scott[24] discussed Campbell's case of incarceration of a retroverted uterus with rupture during pregnancy at the sixth month. Three decades ago Brodhead,[54] in this country, and Sinclair,[112] in Europe, championed the principles set forth by Wallace,[113] believing that "complete utero-parietal adhesions render repetition of cesarean section simple and easy." They admitted, however, that rupture of the uterus could and did infrequently follow ventro-fixation. Two of the cases reported by Mahfouz[14] in 1937 "resulted from a previous fixation operation." In his cases the posterior surface of the uterus became thinned out during labor and rupture occurred at the level of the lower segment. Spalding[114] reported a case of rupture subsequent to uterine suspension. Ventro-fixation procedures in the child-bearing period have been relegated to the past, in so far as we are concerned.

c. *Cervical Operations*: It is a well-known fact that cervical strictures or stenosis may follow any surgical procedure upon the cervix, and one cannot overemphasize the absolute necessity of the proper post-operative care extending over a long period of time in these cases. Doubtless many women have been hysterectomized solely because someone was indifferent or negligent about dilating the cervical canal repeatedly during the months that followed operation. We know of no case of rupture of the uterus in this locality due to amputation of the cervix, trachelorrhaphy, conization, or cauterization. However, we have seen cases of conglutinatio orificii externi following conization, and instances of dystocia attributable to a Sturmdorf amputation. It is obvious that all women who have had any cervical operation should be carefully observed during subsequent pregnancies.

As early as 1883, Murphy[115] reviewed all instances of postoperative cicatrical atresia of the cervix as a cause of dystocia. Audebart[116] (1898), Guibot,[117] and LePage,[118] in 1903, reported difficult labors following trachelectomy. Writing in 1926, Eastman[119]

Length of Labor and Duration of Rupture

		41 days	36 days	24 days	11 days	7 days	5 days	4 days	72 hours	59 hours	48 hours	46 hours	36 hours	28 hours	25 hours	24 hours	23 hours	20 hours	17 hours	15 hours	14 hours	13 hours	12 hours	11 hours	10 hours	9 hours	8 hours	7 hours	6 hours	5 hours	4 hours	3 hours	2 hours	1.5 hours	1 hour	45 minutes	30 minutes	15 minutes	No labor	Unknown
Spontaneous																																								
Group A	L						1		1			1			1	1		2	1										1	1									5	2
	R													1									1		1		1		1	1	1	1	1	2	1					4
Group B	L								1									1		1			1		1				1	1	1	1	2		2				4	
	R										1									3												3	2		2			2		2
Traumatic																																								
Group A	L					2			1	1	1		1	2		1	1	1	1	1	2		1			1		1												9
	R	1	1	1	1	1		1	1										1		1		2						2			1	2	1	4	3				3
Group B	L										1																													
	R																																		1					

L = Length of labor R = Duration of rupture

Table 6.

discussed a patient who was subjected to a Sturmdorf amputation during the first three weeks of pregnancy, and whose uterus ruptured subsequently, after she had been in labor less than 12 hours. Meagher[120] tells us of a patient who had two normal deliveries after amputation and uterine rupture during the third delivery, forceps being used.

d. *Congenital Anomalies of the Uterus*: In many uteri that rupture spontaneously during pregnancy there are gross congenital abnormalities. Kane[108] stated that infantilism was present in practically every case of rupture occurring in primigravidae. Baisch[105] described the uteri as being "paper thin" in these cases. According to Thorne,[121] however, Ley's primigravide delivered a normal infant 19 months after having the rent in her uterus sutured, precluding infantilism. Persons with infantile uteri are usually sterile, and infantilism very seldom operates as a factor in causing uterine rupture. It is more apt to cause abortion.

Mahfouz[14] reports two cases of faulty development. One occurred in the rudimentary horn of a bicornate uterus, and the other was a case of uterus bicornis with persistence of the urogenital sinus.

Rupture of bicornuate uteri has been reported a number of times. Kaminester,[122] McNeile and McBurney,[20] Gordon,[123] Truesdale,[124] Tovey,[125] and Pintor,[126] each report one such case. Cornual pregnancy rupture occurs much more frequently, three of the Charity Hospital series falling into that category.

e. *Prolonged Labor*: As a general rule, the longer a patient is in labor the thinner the lower uterine segment becomes and consequently the more susceptible to rupture, either spontaneously or as the result of manipulative interference. Table 7 shows that 21 cases were in labor 20 hours or more, two of them being in labor for seven days and one for five days. Of the previously sectioned group (b), three were permitted to stay in labor 15 hours, and one labored for 48 hours. The labor need not necessarily be "dry" to be dangerous. Hilda Shufflebotham[127] and others have reported instances of spontaneous rupture of the uterus in non-sectioned cases with a completely dilated cervix and with intact membranes.

Location of Rupture

	Group A.		Group B.	
	Sponton.	Traum	Sponton	Traum.
Cervix into Lower Segment and Corpus		1		
Lower Segment (39)				
Anterior Wall	1	1		
Posterior Wall		1		
Anterior and Posterior Walls	1			
Lateral Wall	2	3		
Wall not stated	8	16		
Lower Segment and Bladder		2		
Low Section Scar			1	
Lower Segment extending into Fundus	1	1	1	
Fundus (21)				
Scar of previous rupture			1	
Operative Scar (section)			13	1
Fundus (no operative scar)	1	2		
Pregnant Horn	3			

All ruptures were definitely complete except in 2 cases, which may have been incomplete.

Table 7.

f. *Invasion of Uterus by Hydatid Mole*: Krellenstine[128] could find only four cases of spontaneous rupture of the uterus due to hydatid mole in the literature up to 1924. He reported one such case. In 1935, McClure[129] was able to find a total of seven cases and he reported the eighth. In 1938, Conway[130] described his case of destruction of the entire fundus uteri by the massive rupture caused by invasion of the villi.

g. *Uterine Neoplasms*: It is interesting to note that not one case in the Charity Hospital series had a rupture due to uterine neoplasm. Fibroids are very common at this institution and innumerable Negresses with myomata palpable through the abdominal wall have delivered without difficulty. A number of cases have been sectioned here due to fibroids in the pelvis. P. H. Williams[131] speaks of a woman who was cesareanized for fibroid and contracted pelvis. At her next labor she was again sectioned and the uterus found to be ruptured at the site of previous cesarean. Schwartz[132] cites a case of a woman who extruded a submucous fibroid through the vagina, the removal of which caused unrecognized uterine rupture with resultant death. Weber[133] tells us of an instance of rupture of the uterus following version and extraction, perforation being at the site of a gangrenous fibroid. Wood[134] reports a case of rupture of an abscess of the uterine wall during labor. He states that the abscess originated in a degenerating fibroid. Kosmak[135] reports the occurrence of spontaneous rupture in a fibroid-containing uterus. The presence of the tumor was proved after version and extraction, and the rent was in the lower segment. A case of uterine rupture at the site of an intramural myoma after a bag had been introduced to dilate the cervix was reported by Throsby.[136] Carcinoma of the cervix, undiagnosed during pregnancy, may cause uterine rupture. Smith[137] reports complete lower segment tear attributed to cervical malignancy.

h. *Overdistention*: The theory of overdistention was set forth by Paddock[138] and Couvelaire[62] because of the occurrence of uterine rupture in three cases of polyhydramnios. Schwartz[132] reported a case of polydramnios with rupture, but this patient also received pituitary extract.

i. *Placenta*: DeSa[139] and Isbister[140] each report a case of uterine rupture associated with placenta praevia. Cases Nos. 5 and 22 were so diagnosed. Phaneuf[141] reported two cases of the association of abruptio placenta and ruptured uterus, an occurrence observed in No. 32 of the Charity Hospital series. Siegler[146] described such an instance with partial uterine rupture. It is probable that these conditions have been present much more often than has been recognized.

2. *Causes Due to the Fetus*

a. *Malpositions and Malpresentations*: Dystocia and impossible deliveries *per vias naturales* produced by abnormal presentations and/or positions of the fetus are prominent factors in the production of uterine ruptures. Transverse lie of the fetus, and brow, face, and parietal bone presentations are all essential causative agents. Rupture occurs with relative frequency following versions and extractions in such cases which have been neglected for a considerable time. Of the series now being reported, there were three cases (Nos. 1, 23 and 48) of transverse lie of the fetus with shoulder or hand presentations, and one of compound presentation (No. 43), as shown by table 6.

b. *Plural Gestation; and Overgrowth of Fetus*: No. 37 presented twins with rupture at the seventh month, the site being a classical section scar. Isbister[140] reported a case of twins with polyhydramnios, with rupture occurring at seven and a half months. Laffont et al.[198] reported a case of rupture following twins, and Orthner[199] cites a case of twins which were extruded into the abdomen due to traumatism. According to C. H. Davis,[42] Jewett reported a case in which one of the twins was born spontaneously, while rupture occurred before the delivery of the other. Gerrard[286] had a case in which the first twin was delivered normally and the second became impacted with prolapse of the cord and a hand. Attempted version and extraction in the home was unsuccessful; consequently, she was brought to the hospital where extraction was performed and rupture detected. Overgrowth of the fetus with resultant feto-pelvic disproportion accounts for a considerable number of ruptured uteri. In the management of women who have had several babies, the tendency for the feti to increase in size must be kept in mind. Furthermore, the observation has been made that diabetic individuals are prone to have large babies.

c. *Hydrocephalus and Other Abnormalities of the Fetus*: According to Bland and Goldstein,[142] Simpson first pointed out that hydrocephalus is a relatively frequent cause of rupture. Blevins,[143] Romulo,[144] Murray,[145] Acosta-Sisson,[39] Porter,[147] C. H. Davis,[42] and Laffont[149] each report one case of rupture ascribed to this fetal abnormality. Zweifel[150] reported two cases. Mahfouz[14] had four cases in his series of 110 ruptures. Fred Müller[151] recorded five cases of hydrocephalus in 108 cases of rupture; Ames[148] six in 100; Trask,[32] twelve in 417; and Merz,[152] found 18 in 230 cases. All these were collected series, and there may have been some reduplication. Lobenstine[16] had but one case of hydrocephalus in his series of 78 cases of rupture, and in the Charity

Hospital series, there are only two (cases Nos. 13 and 47). Keith[153] found that 16 uteri had ruptured in the birth of 74 hydrocephalic infants; and Schuchard[154] noted 14 in a group of 73.

Fetal malformations are very infrequently encountered as causing rupture. Tottenham and Pillai[155] report uterine rupture in a case of Siamese twins. Kowles[333] tells of a case of rupture following version and extraction of a monster.

3. *Causes Due to the Pelvis.* The pelvic condition most frequently responsible for uterine rupture is the generally contracted pelvis of moderate degree. Michaelis[28] taught that the generally contracted pelvis (justo minor) is the most commonly encountered. Bandl,[51] on the other hand, believed that the simple flat pelvis was the most frequent. The mixed type (asymmetrically contracted) is less frequently responsible. C. H. Davis,[42] tabulating the collective series of Trask, Ames, Bandl, Merz, Von Winckel, Fritsch, and the series reported by Lobenstine, found 598 cases of "contracted or deformed pelvis" in 1342 cases of ruptured uteri. Mahfouz[11] had 52 out of 110 (47 per cent), a ratio of the incidence of pelvic deformity generally agreed by most of the writers. If the deformity is great, its significance is appreciated early and a hard protracted labor is not permitted. In the cases with slightly subnormal pelves, however, recognition of the true status of affairs may be too late. A history of multiparity may serve to lull the observer into a sense of ungrounded security, as we know in many cases there are uterine cicatrices from previous labors which may give way and the size of the baby may be greater than that of its predecessors. This series included four cases (Nos. 53, 54, 56 and 58) of stated contracted pelvis in the non-sectioned group (A) and no statement regarding the pelvis in eight cases (Nos. 2, 3, 11, 16, 21, 31, 40 and 46) of that group. Of the previously cesareanized cases (B) we find five with abnormal pelves (Nos. 4, 6, 12, 49 and 52) and two not stated (Nos. 33 and 36). No mention is made regarding the type of pelvis in the cases of cornual pregnancy (Nos. 7, 51 and 55).

Neoplasms of the bony passages sufficiently large to cause dystocia are fortunately only very occasionally encountered. Ovarian tumors, on the other hand, leading to obstruction of the passageway of the fetus are infrequently seen although far from rare. Larinsky[156] reported a case in which an ovarian cyst was responsible for uterine rupture. Recently, we have cesareanized two women with ovarian tumors obstructing the pelvis. According to C. H. Davis,[42] Albers-Schonberg[157] reported a case where a kidney prolapsed into the pelvis causing rupture of the uterus.

We mention vaginal stenosis, septa, and bands only for the sake of completeness. According to Stander,[158] "among the rare causes of serious dystocia, vaginal neoplasms are worthy of mention, Güder, in 1893, having collected 60 cases from the literature. The obstruction was due to the presence of cystic structures, fibromata, carcinomata, sarcomata, or hematomata, arising from the vaginal walls or the surrounding tissues."

4. *Conditions Due to the Individual:* Several authors have pointed out that the only explanation of rupture in some cases is individual susceptibility. They speak about the fact that the distensibility of the tissues varies with the individual. One thing is certain and that is that women with pendulous abdominal walls are more apt to have ruptured uteri than are their better developed sisters. Case No. 58 is an excellent example of the pendulous abdomen type. Cases Nos. 49 and 52 were quite obese.

5. *External Causes:* The uterus is particularly vulnerable during pregnancy due to its size, position, and its distended condition. Its mobility, elasticity, and the pressure equalizing effect of the liquor amnii serve to protect it from contusions and pressures; nevertheless, rupture has occurred from all sorts of trauma, including: falls, kicks, sudden muscular exertions, and goring by animals. The episode, cited by Trask[32] of a bison bull ripping the fetus

from an Indian squaw is classical. Incidentally, she is said to have recovered.

Manual or instrumental dilatation of the cervix has undoubtedly claimed its full share of ruptured uteri. Porter,[147] Phaneuf,[159] Stamm,[160] and others discuss one case each of rupture of the uterus in which a manual dilatation was done. Williamson[161] reported two cases, and McNeile and McBurney[20] in their series of thirty cases, of uterine rupture, found four such cases. The last mentioned also report six cases following manual removal of the placenta. Acosta-Sisson,[39] Holland,[43] Riddel,[106] Sherrill,[162] Cherry,[163] and Clapper[164] cite instances in which the placenta was removed manually with rupture of the uterus.

Ruptured uteri caused by forceps, bags, embryotomies, and the like have taken the lives of an untold number. In the Charity Hospital series it is definitely known that attempts were made to deliver 18 of the patients at home. Four of these were actually delivered by forceps with resultant rupture. Forceps were unsuccessfully applied in six known cases, and just what was done in the remaining eight was not cited.

Versions and Extractions: Versions and extractions under unfavorable conditions are fraught with grave danger. Lobenstine[16] stated that internal podalic version was the etiologic factor in five of the 46 cases of complete rupture in his series, and that there were three ruptures due to "both version and transverse presentation." Sheldon[2] states that from January, 1918, to January, 1935, 731 internal podalic versions were performed at the Boston Lying-In Hospital, with resultant rupture in 12, an incidence of one to 61. McNeile and McBurney[20] found seven versions in the Los Angeles County General Hospital series of thirty ruptured uteri. Version and extraction were done in seven of the Charity Hospital cases and was attempted on one case, as presented by table 4.

Oxytocics: As early as 1847, Trask[32] cited 16 cases of rupture due to the imprudent administration of ergot, and he declared, "There can be no doubt that the injudicious exhibition of this drug has been the source of infinite mischief. It is difficult to obtain data upon this subject, for few in whose practice such cases occur would be disposed to report them, and those met with in consultation practice are kept secret from motives of delicacy."

In 1895, Oliver and Schaefer[165] first demonstrated the pressor action of the posterior pituitary, and Dale[166] (1906) noted that pituitary extract caused rhythmic contractions of the nonpregnant uterus. Bell,[167] of Liverpool, in 1909, and Foges and Hocstaetter,[168] of Vienna, in the same year, used it to overcome uterine inertia and check uterine bleeding. These investigators initiated the use of the extract after its stimulating effect upon the uterus of a pregnant animal was proved by Frankl-Hochwart and Froelich.[169] Pituitary extract became widely accepted by persons practicing obstetrics, and no distinct limitations to its use seem to have been recognized, some persons going so far as to say that it was devoid of all danger. However, as early as 1913 a note of warning regarding its indiscriminate usage was sounded. Edgar[170] reported that even small doses given during the first stage of labor had caused alarming complications —including rupture of the uterus. He had previously advocated its employment in cases of uterine inertia even though the cervix was incompletely dilated. In discussing pituitrin in labor, Mundell[180] (1916) declared, "It is generally accepted that it has no place whatever in normal labor and should never be used in such. It may be used, with great caution, however, in the first stage of labor, but it is not advised. Its field is in secondary inertia in the second stage of labor, and then only in selected cases and with discretion." Writing in the same year, McNeile[181] discussed his case and fifteen more collected by him, formulating the following conditions: "1. Complete dilatation and effacement. 2. The membranes must be ruptured. 3. Presentation should be longitudinal. 4. In cephalic presentations there should be no deflection of the head and the drug should only be used in vertex and breech presentations. 5. There should be no disproportion between the presenting part and the pelvis. Before the use of the drug the previous obstetrical history should be carefully considered and special emphasis should be paid to the consideration of any operative deliveries. 6. The presenting part should be engaged."

During the past two and one-third decades many contributions concerning the administration of pituitary extract have appeared in the literature. Among these we find Wertenbaker,[182] Grosvenor,[183] Marcondes,[184] Hall,[185] Phaneuf,[141] Rucker and Haskell,[186] Pouliot and Truchard,[187] Maxwell,[188] Sherrill,[162] Mendenhall,[189] and many others. Paul Titus[190] expressed the present consensus of obstetrical opinion when he stated that "the use of pituitary extract during labor is now looked upon as unjustifiable and dangerous, although it is unfortunately true that it is still employed by some as a means of hastening labor."

In this series, eight patients received injections of pituitary extract. Of these, it is interesting to note that seven occurred prior to 1927, and that the only previously sectioned case to receive the oxytocic was being attended by a midwife in 1916.

PATHOLOGY

Anatomically, ruptures are divided into two classes: *incomplete,* involving the endometrium and myometrium, but not the peritoneum, and *complete,* in which the peritoneum is torn. The characteristic finding in the former, or partial variety, is a subperitoneal hematoma. If the tear is sufficiently large the placenta or fetus may lie just beneath the peritoneum. The amount of bleeding depends chiefly upon the site of the rupture, being massive if the base of the broad ligaments or the site of the placenta are involved. In spontaneous ruptures the tear is usually more or less oblique and often transverse, although it may assume any shape; while in traumatic ruptures it is usually longitudinal. The anterior uterine wall is most often involved, and the posterior wall the least common. Case No. 58 presented rupture in the anterior wall and another in the posterior wall (lower segment). In reported series complete rup-

Treatment and Time Interval After Rupture

Spontaneous Ruptures	*Lived*	*Died*
Hysterectomy after 72 hours		1
16 hours		1
12 hours	1	
10 hours		1
8 hours		1
6 hours		1
5 hours	1	
3 hours	1	1
2 hours	3	
1½ hours	1	
less than 1 hour	1	
? hours		2
~Rupture at operation	2	
Gottschalk-Portes' operation		
after 15 hours	1	
Suture of uterine tear		
after 20 minutes	1	
3 hours		1
15 hours	1	
Treated non-operatively		
Delayed diagnosis:		
B. welchii peritonitis 28 hours		1
Recognized but patient remained in shock 2 hours		1
1½ hours		1
Unrecognized 72 hours		1
4 hours		2
Evidently ruptured for several months	1	

Traumatic Ruptures	*Lived*	*Died*
Hysterectomy after 24 hours		1
14 hours		1
12 hours	1	1
6 hours	1	1
2 hours	1	
1 hour	1	3
30 minutes		1
with repair of bladder injury after 2 hours	1	
Suture of uterine tear		
after ? hours		1
4 hours	1	
1 hour		1
24 days	1	
Treated non-operatively:		
In shock 72 hours		1
1 hour		4
Unrecognized 41 days		1
36 days		1
7 days		1
6 days		1
4 days		1
18 hours		1

No history regarding type of rupture in two cases. One was hysterectomized and lived. The other died on the operating table.

Table 8.

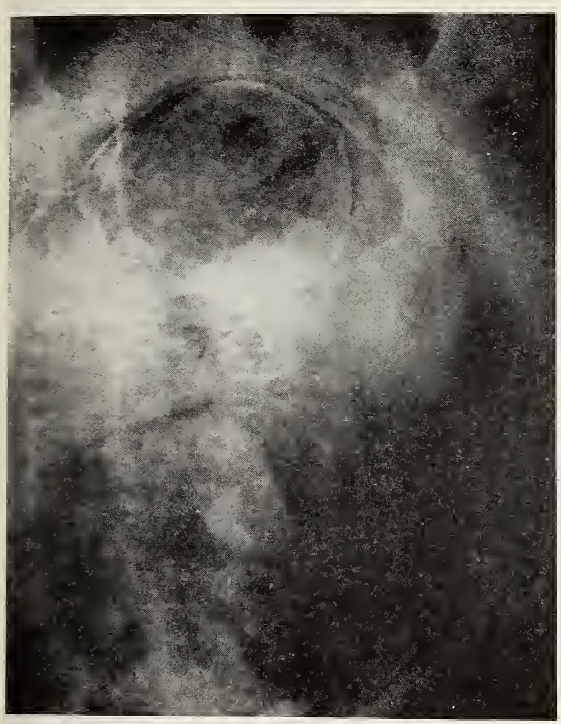
Racial Incidence of Maternal Deaths
Compared with Total Deliveries Per Annum

White			YEAR	Colored		
Number deliveries	Number deaths	Mortality per cent 1 2 3 4		Number deliveries	Number deaths	Mortality per cent 1 2 3 4
217	5	2.304	*1913*	308	8	2.590
202	5	2.475	*1914*	319	6	1.880
247	4	1.619	*1915*	370	5	1.351
227	5	2.202	*1916*	458	6	1.310
242	2	.826	*1917*	434	5	1.150
227	7	3.083	*1918*	387	3	.775
211	4	1.895	*1919*	370	6	1.621
340	10	2.941	*1920*	587	11	1.872
340	14	4.110	*1921*	577	14	2.426
396	13	3.282	*1922*	598	11	1.839
307	4	1.335	*1923*	700	13	1.857
466	9	1.931	*1924*	832	14	1.682
510	8	1.568	*1925*	848	15	1.769
504	6	1.190	*1926*	974	9	.923
548	13	2.372	*1927*	964	8	.829
616	11	1.785	*1928*	1.087	13	1.195
588	10	1.700	*1929*	1.191	14	1.175
748	14	1.871	*1930*	1.324	12	.906
907	12	1.323	*1931*	1.621	17	1.048
1.188	11	.925	*1932*	2,078	18	.866
1.190	19	1.596	*1933*	2.263	23	1.016
1.239	9	.726	*1934*	2.221	22	.990
1.380	8	.579	*1935*	2.492	20	.802
1.397	12	.858	*1936*	2.432	16	.657
1.429	7	.489	*1937*	2,750	28	1.054
1.482	8	.539	*1938*	2,959	27	.911
1.342	8	.596	*1939*	2,583	22	.851
1.688	5	.296	*1940*	3,239	17	.524

Graph 3.

ture is by far more common, and it will be noted that in this series of 64 cases there were 62 definitely known instances. Nevertheless, we believe, as do many others, that the incomplete variety occurs more often than the complete but that it is infrequently recognized. Doubtless many persons presenting a febrile postpartal course, and even some who are fever-free, have minor partial tears which are undiagnosed. Ruptures taking place in cesarean scars are usually complete and may extend into the bladder or cervix or both. Gross hematuria indicates urinary vesical trauma but not necessarily lacerations of the bladder. In the complete class the fetus and placenta may escape into the abdomen or they may plug the uterine rent. (See table 5.) The patient may become exsanguinated or there may be surprisingly little hemorrhage. One of our cases (No. 56), for example, had an annular tear in the lower uterine segment with the fetal head visible through the dilated cervix and with the fetal body free in the abdominal cavity, and yet there was practically no blood in the abdomen and there had been no appreciable bleeding via vaginam. Either of these varieties may occur spontaneously or be due to trauma. In the spontaneous type we have included only those cases that have ruptured without outside interference. By the traumatic type we mean those cases which have ruptured due to intervention (including the administration of oxytocics). Previously cesareanized cases (group B) will be found in both types, as we do not list them as being traumatic solely because they have been sectioned.

Whereas the tears occurring in labor are more commonly located in the lower uterine segment, those making their appearance



Roentgenogram of Case No. 56. Fetal head in the uterus; fetal body in the abdomen; gas bacillus infection.

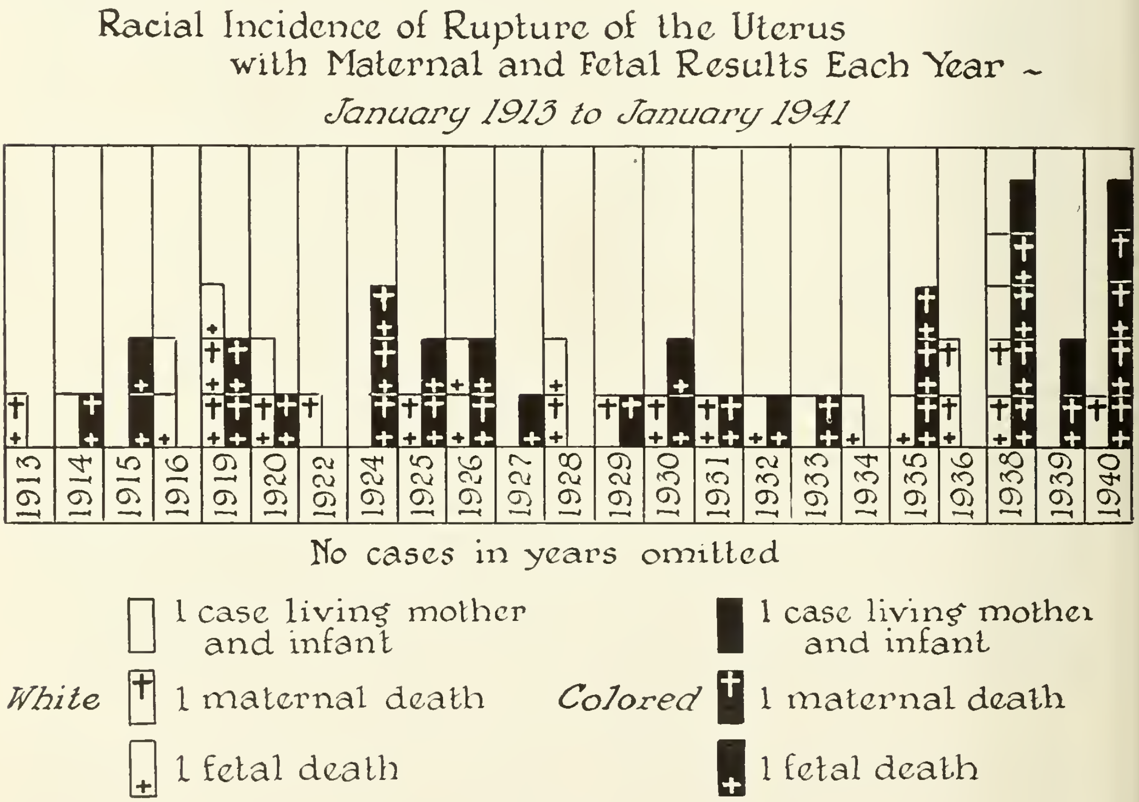
during pregnancy are, as a rule, confined to the upper part of the uterus. They are usually linear but may assume any configuration. It is rational to believe that they are generally small at first, and that their rapid increase in size is due to uterine contractions. The uterine wall is commonly thinned out or diseased, although there seem to be no definite characteristic microscopic changes applicable to all cases. Hyaline, granular, fatty degeneration, and fibrosis uteri have all been given prominent place by different writers. Simpson,[191] Brindeau,[192] De Lee[193] and others reported fatty degeneration in the muscular fibers in some cases. In recent reports, however, the various writers appear very skeptical about same. Dawidoff and Poroschin[194] found the elastic fibers decreased in number, irregularly thickened, arranged in a zig-zag fashion, and not staining as normal fibers. They attributed this to repeated pregnancies, and cited the work of Martin and Dührssen[195], who described a diminution of the fibers in senile uteri. According to Kerr[196], no subsequent investigations have confirmed the theory of Dawidoff and Poroschin. He declares, "In none of the specimens of my series of 29 cases, submitted to examination, did the late Professor Teacher discover any definite degeneration which could be described as of a particular character. In Mahfouz's[14] series of 110 cases, eighteen uteri were subjected to a very careful examination and in none was there "any essential degeneration."

The work of Williams,[197] Williams and Mason,[24] and Losee[200] on uterine wound healing is well-known. In cases of healing by primary intention throughout, there is no cause for concern; however, as has been previously pointed out we can never be absolutely sure that such has occurred in a given case.

SIGNS AND SYMPTOMS: DIAGNOSIS

Impending Rupture: As DeLee[193] has written, "If the accoucher is on the alert, he will almost always be able to detect a threatening rupture of the uterus, and diagnose early a thinning of the lower uterine segment. In contracted pelves and all cases of mechanical obstruction, and where he knows that the uterine wall is weakened, the attendant will be especially watchful." The history in these cases is particularly important, and one should be very careful to inquire into the type of previous pregnancies, kind and duration of labors with management of the third stage, and the presence of any pelvic infection or abnormality. Impending rupture may occur without signs or symptoms, especially in those cases which have been previously cesareanized and who are not in labor. However, the classical picture is usually present, and a diagnosis can be made by thorough observation. Typically, there is no progress in spite of strong uterine contractions, which may be exceptionally painful. Abdominal tenderness, particularly over the lower segment, is the rule. Tenderness over a section scar is of particular significance. Uterine contractions may come one behind the other, and the patient usually shows evidences of restlessness or exhaustion, with an accelerated pulse. The effect on the blood pressure is variable. The fetal heart tones may become abnormal, but not necessarily so. Bandl's ring may or may not be present.

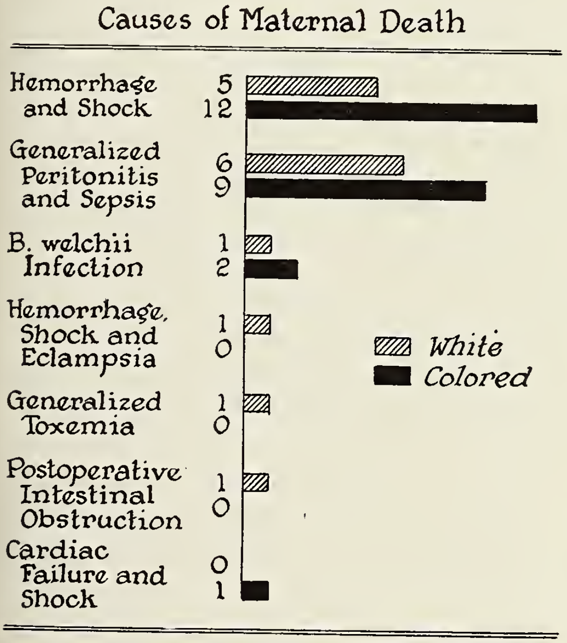
Actual Rupture: The signs and symptoms of actual rupture range in severity from very mild disturbances to profound shock and death. Before the onset of labor the symptoms may be comparatively mild, and in rupture arising in pregnancy after cesarean section they may also be insignificant. This is the exception, rather than the rule. In spontaneous complete rupture occurring in labor the patient usually suffers sudden, sharp, tearing pain. Not infrequently the patient feels as if something has burst within her. The uterine contractions generally cease if the fetus has been extruded into the abdominal cavity and the patient's "pains" are no longer of the character associated with those of labor, but become more abdominal in type. The backache present during labor may cease. The amount of hemorrhage, with its trend of signs, (falling blood pressure, rapid pulse, "air hunger", blanching of the mucous membranes, decreased temperature, "cold sweats", and even the facies of shock) depends very largely upon the efficiency of tamponade afforded by the fetus, and even to a greater extent upon the location and extent of the rent. Low segment tears not involving the base of the broad ligaments cause less bleeding than those in the fundus. Blood collecting beneath the diaphragm gives rise to shoulder pain, while hemorrhage into the broad ligament may result in pain in the leg. If the fetus is viable at the time of expulsion into the abdomen, the patient may be cognizant of abnormal fetal movements. Abdominal palpation reveals superficiality of fetal parts, and the abdomen may assume very peculiar configurations. The abdomen often becomes rigid, but in case No. 50 marked softness was noted. Nausea and vomiting may occur as premonitory manifestations. There is usually little or no bleeding per vaginam, and vaginal examination discloses a regression of the presenting part. In case



Graph 4.

No. 56 the fetal head was wedged in the pelvis and it was visible through the cervix, although the body was free in the abdominal cavity. In the incomplete variety, emphysematous crackling may be elicited, according to various authors. After delivery, tears may be palpable. Intestine may prolapse into the uterus or vagina in the complete type. Unrecognized ruptures may lead to peritonitis and sepsis, but as we have pointed out small incomplete tears may occur unnoticed.

Any evidence of shock (mild though it may be) during or immediately following labor should call for a prompt consideration of the possibility of uterine rupture. This is especially true if it follows any operative intervention, the administration of any oxytocic, or if the history contains any facts pointing to weakness of the uterine wall due to previous operations, infections, etc. The cervix should be inspected after every vaginal delivery, and the lower uterine segment should be examined after every operative delivery, if difficulty has been encountered.



Graph 5.

PROGNOSIS

The prognosis depends upon the site and extent of the laceration, the associated degree of hemorrhage and shock, the length of labor and duration of rupture, the presence of infection, and the type of treatment. The condition of the mother prior to the time of rupture is also a very important factor.

Condition of Feti on Admission to Hospital

Condition	*Number*
Dead	31
Poor	1
Good	20
Non-viable	3
?	4
Delivered alive prior to admission	5

Fetal Mortality—73.43%

Table 9.

Everyone agrees that uterine rupture is one of the gravest accidents encountered in obstetric practice. In the Charity Hospital series of 64 cases the maternal mortality was 60.93 per cent while the fetal mortality was 73.43 per cent. Tables 10 and 11 set forth the condition of the patients and their feti on admission, accounting for such a high mortality. Roxas, Baens, and Katig-

Condition of Mothers on Admission to Hospital

Condition	*Number*
In shock	21
In early shock	5
Cardiac failure	1
Toxemia (marked)	2
Poor	5
Fair	14
Good	16

Maternal Mortality—60.93 %

Table 10

bak[18] reported a series of 56 cases at the Philippine General Hospital with a maternal mortality of 85 per cent and a fetal mortality of 100 per cent. McNeile and McBurney[20] state that of the 30 cases at the Los Angeles County General Hospital (January 1, 1923 to April 1, 1934) twenty (66.6 per cent) mothers and 19 (63.3 per cent) feti expired. At the Boston Lying-In Hospital (1918-1934) the mortality rate was 42.3 per cent for the mothers and 82 per cent for the babies, according to Sheldon[2], who reported 26 cases (eight of which were incomplete ruptures). In Lobenstine's[16] 46 cases of complete rupture (New York Lying-In Hospital, 1890-1909) there was a maternal mortality of 73.9 per cent and a fetal mortality of 83 per cent. The figures for 29 cases of incomplete rupture were 27.5 per cent and 52 per cent, respectively. Asa B. Davis[15], reporting the ruptured uteri cases at the same institution from 1909 to September, 1926, found 53.4 per cent maternal and 85.2 per cent fetal mortality in 88 cases of the complete variety. Of 18 incomplete cases there were 55.5 per cent maternal deaths and 61.1 per cent fetal deaths. In his analysis of twelve cases at St. Luke's Hospital in Cleveland and 33 cases occurring during a five-year period in 41 of the 47 member hospitals of The Hospital Obstetric Society of Ohio, Burkons[3,17] calculated a maternal mortality rate of 37 per cent and a fetal fatality incidence of 69 per cent. Rupture after cesarean section carries a better prognosis for the reason that diagnosis is made quicker and treatment is instituted more readily. In the Charity Hospital group there were fifteen previously sectioned patients, four of whom succumbed (26.6 per cent).

Patients Delivered Prior to Admission and Those Subjected to Attempts at Delivery in the Home

	White	*Colored*
Delivered by Physicians with Forceps	4	1
Attempts at Delivery by:		
Physicians (with forceps)	2	4
Midwives and Physicians		3
Midwives	1	3
Total	7	11

Table 11.

TREATMENT

Prophylactic treatment cannot be over emphasized, as it must be admitted that most uterine ruptures are avoidable. As Asa B. Davis[15] said, "The time to treat rupture of the uterus is before it occurs. In the last analysis it means better, more conscientious and systematic care during pregnancy, labor and the postpartum state." The injudicious use of oxytocics and any operative intervention of a questionable nature, are to be condemned. The patient who has had a cesarean section or who gives a history indicative of previous serious obstetrical abnormalities should be informed as to the possibilities in her case. It is not necessary to frighten these women in order to convince them that antenatal care is of the utmost importance; on the other hand, they should be assured that their cooperation is a prerequisite for the correct management of their cases. It would be preferable that many such pa-

Record of Transfusions

Number of transfusions	*Lived*	*Died*
0	13	23
1	9	8
2 or more	3	8
	25	39

Table 12.

Final Diagnosis Determination

	White	*Colored*
Number Autopsies	6	10
Postmortem Sections and Examinations	2	1
Expired on Operating Table	1	4
Operated upon, No Autopsy	3	5
Diagnosis Proved by Examination *(No operation or autopsy)*	2	4

Table 13

tients be hospitalized before they go into labor or reach term.

Active treatment depends upon the individual case: In general, hysterectomy should be performed immediately after rupture. The shock and blood loss associated with the accident must be combatted by the administration of blood transfusions. If compatible blood or plasma is not obtainable at the time the emergency arises, infusion of 10 or 20 per cent dextrose in water or gum acacia is of great value. Morphine, oxygen, adrenal cortical hormone, and other anti-shock measures are important, but the value of blood transfusions and plasma infusions is unquestionable. Undoubtedly some of the fatal cases in this series might have survived had they received blood. This is not said in a spirit of criticism as compatible donors were not available in many instances. However, in the present day of blood and plasma "banks", no obstetrical case should be permitted to expire because of the lack of blood. Cases which have been mismanaged, including those that have been examined repeatedly, should be given a double prophylactic dose of tetanus antitoxin and gas gangrene serum. In certain cases one may consider suturing the tear, keeping in mind the possibility of infection and the great jeopardy of rupture during subsequent pregnancy.

Indications of impending uterine rupture are indications for immediate laparotomy. Patients with threatening rupture or ruptured uteri at home should be hospitalized and treated without delay.

The postoperative treatment will include: blood transfusions, infusions, vitamin administration, and measures to combat abdominal distention. Oxygen is definitely indicated in some cases. Chemotherapeusis should be instituted if there is active or probable infection.

SUMMARY AND CONCLUSIONS

1. Sixty-four cases of rupture of the pregnant uterus managed at the Charity Hospital of Louisiana at New Orleans from 1912 to 1941 have been analytically reported.

2. A study of those records and a review of all of the available literature confirms the universally accepted opinion that uterine rupture is a distressingly grave obstetric complication.

3. The high maternal mortality (60.93 per cent) and fetal fatality (73.43 per cent) in this and other large hospital series can be explained in part on the basis that complicated and mismanaged labors gravitate to institutional practice. Forty-five of the Charity Hospital cases were designated as emergencies at the time of admission. In many instances the fetus was dead when the mother arrived.

4. Any evidence of shock during or following labor should call for a prompt consideration of the possibility of ruptured uterus. If suc ha patient responds only temporarily to anti-shock measures the probability of active bleeding is marked.

5. Rupture of the uterus after "low" cesarean section is rare. Nevertheless, every cesareanized individual is entitled to especially close supervision during each subsequent pregnancy. One woman in this series who had been subjected to laparotrachelotomy experienced an uncomplicated delivery via vaginam and a year subsequently the section scar ruptured at term.

6. Classical section cicatrices are particularly vulnerable to rupture, providing foundation for the statement "once a classical section—always a section." A woman in this group had undergone one classical and two low operations. Rupture occurred at the site of the classical incision.

7. Uterine rupture subsequent to myomectomy is quite rare. Although the number of fibroid cases at Charity Hospital is strikingly great, there is not a single recorded instance of rupture following myomectomy. Incidentally, practically all of the myomectomized cases have been delivered vaginally.

8. Successful management of rupture of the uterus requires alert evaluation of the status of affairs and immediate therapeutic action. This series and a study of reported cases substantiate the belief that hysterectomy is the procedure of choice. The administration of blood, and in many cases plasma also, plus other anti-shock

measures cannot be overstressed. The availability of blood and plasma "banks" has been the answer to many obstetrical patients' prayers. We contend that every case should be given the benefit of blood typing and matching during pregnancy.

9. As Asa B. Davis declared, "The time to treat rupture of the uterus is before it occurs. In the last analysis it means better, more conscientious and systematic care during pregnancy, labor, and the post-partum state." The injudicious use of oxytocics and instrumental intervention of a questionable nature are to be condemned.

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THE RUPTURE (INTRAPERITONEAL, INTRA-INTESTINAL AND INTRAVESICAL) OF SUPPURATIVE PELVIC MASSES

WITH AN ANALYSIS OF 53 CASES FROM CHARITY HOSPITAL OF LOUISIANA AT NEW ORLEANS

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Since Simpson's[1] demonstration of the superiority of expectant over radical therapy in pelvic inflammations, most gynecologists have taught and practiced the conservative management of pyosalpinx and tubo-ovarian abscess. They have also believed and taught that this plan of management is perfectly safe because rupture of inflammatory pelvic masses is an unlikely event if not, indeed, a true surgical curiosity.

Though I still believe that the conservative treatment of acute pelvic inflammations is the preferred treatment for such conditions, my complacency in regard to the possible rupture of inflammatory pelvic masses has been rudely shattered. In a review[2] of the gynecologic deaths at Charity Hospital of Louisiana at New Orleans over a recent six year period I found that of 38 deaths due to tubo-ovarian or pelvic abscess, 14 were demonstrated by necropsy to be due to rupture of these masses, and on clinical grounds the same cause of death could reasonably be presumed in seven other cases in which necropsy was not permitted.

Disregarding for the purposes of this discussion the cases not proved by postmortem examination (though naturally, for practical purposes, they cannot be disregarded), it was both astonishing and disconcerting to find that on a large gynecologic service over a representative period of time the rupture of a pelvic mass was the proved cause of death in more than a third of all fatalities from pelvic inflammation. It was so astonishing, in fact, that I declined to accept the statistics until I had personally studied the postmortem records, all of which were so carefully detailed that their accuracy could not be doubted.

The lesson thus unexpectedly learned led me to examine all the fatal cases of pelvic inflammation in which autopsy was performed at the New Orleans Charity Hospital for the 17 year period ending December 31, 1943, which includes the six year period of my original investigation. For comparative purposes I also examined all the cases of pelvic inflammation treated by surgical measures during the six year period mentioned. I have thus identified (table 1) 44 ruptures of inflammatory masses into the peritoneal cavity, six into the intestinal tract, and three into the bladder, as well as 97 cases in which suppurative pelvic masses were accidentally ruptured into the peritoneal cavity by manipulations at operation. For convenience of

TABLE 1

Distribution of Pathology and Site of Rupture in Spontaneous and Accidental Rupture of Suppurative Pelvic Masses

Location of Rupture	Number of Cases	Pyosalpinx	Ovarian Abscess	Tubo-Overian Abscess	Pelvic Abscess	Pyometrium
Intraperitoneal	44	2	3*	37		2
Intra-Intestnial	6			6*		
Intravesical	3			2	1	
At Operation	97	2	5	85	5	

*In 1 case combined with rupture of a pelvic abscess.

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*Dr. Miller died April 20, 1945.

discussion each of these groups of cases will be considered separately.

I have no exact statistical background for these cases because of certain practical difficulties connected with securing such data, including a change in the record system of the Hospital midway in the period studied. As a matter of fact, knowledge as to the exact proportion of cases of pelvic inflammation in which these ruptures occurred would not be particularly useful. It is known that they form only a small fraction of the pelvic inflammatory masses treated, and a still smaller fraction of the thousands of cases of pelvic inflammation treated, at the New Orleans Charity Hospital during the period in question. The important consideration obviously is not the proportion of patients who suffer rupture of pelvic inflammatory masses but rather a realization of the fact that rupture is a definitely possible complication of suppurative pelvic disease, and of the additional fact that it is attended with a tragically high mortality.

INTRAPERITONEAL RUPTURE OF PELVIC MASSES
REVIEW OF LITERATURE

The paucity of the literature on the subject and the fact that most instances of rupture of pelvic masses are reported as single cases explain why the majority of gynecologists regard this accident as I myself once regarded it, that is, as a surgical curiosity. Up to 1912, according to Brickner[3], 91 cases had been reported, the first in 1868 by Lawson Tait, who recorded additional single cases in 1875 and in 1883. Most cases were reported as single instances, though Cotte and Challier reported five and Boldt six personally observed cases. Boldt, incidentally, saw no additional cases in the 23 years which elapsed between his report in 1889 and Brickner's review of the literature in 1912. Sabadini,[4] who reported two personally observed cases in 1932, stated that approximately 150 cases had been recorded prior to that date, and Feeney,[5] who apparently did not review the literature in detail, estimated in 1940 that the recorded cases then numbered about 250.

I am unable to say definitely how many cases have been reported since Sabidini's review of the literature in 1932, since most of the contributions are in the foreign literature, most of which was not available to me. Cases reported in the American and English literature in the interim include two by Frank[6] in 1933; one by Endreny[7] in 1936; two by Jensen[8] in 1936; two by Tessitore and Potekin[9] in 1938, these being from the New Orleans Charity Hospital and included in the series which I am reporting; two by Martz and Foote[10] in 1939; three by Haultain[11] in 1939; and one by Feeney[5] in 1940. The titles make clear that the cases reported in the foreign literature are chiefly single cases, and it seems fair to say that the series herewith reported from the New Orleans Charity Hospital is the largest yet to be put on record.

Undoubtedly the accident is very much more frequent than the literature indicates, just as the number of cases not verified by operation or by autopsy is undoubtedly very much greater than the number of verified cases. Many cases are probably diagnosed as ruptured appendicitis or as peritonitis of various other origins, or are not diagnosed at all, while in some cases the rupture may be overlooked because it is walled off, just as, for the same reason, occasional ruptures of the appendix are overlooked. Finally, the number of recorded cases is probably much larger than the figures I have cited from the literature would indicate; they merely cannot be found when the literature is reviewed because the titles of the papers in which they are described do not suggest the contents of the communications. The cases I have listed as reported by Jensen, Haultain and Frank were casually included in discussions of other phases of pelvic inflammation. The cases mentioned by participants in the discussion of Warner's[12] communication on ruptured pelvic masses in 1921 suggest that most gynecologists have actually encountered the condition one or more times but have not troubled to record it.

What all of this amounts to is that the accident is by no means the surgical curiosity which it is commonly stated to be.

Brickner,[3] when he reported his first case in 1912, wrote that even allowing for unreported cases and for cases protected by localized peritonitis, the condition is sufficiently common to be borne in mind in every case of purulent tubal infection. His second communication[13] on the subject, published in 1913, after he had himself operated on two additional patients and had learned of two others in the practice of other physicians was entitled "Rupture of Pyosalpinx Not a Rare Accident."

ANALYSIS OF CASES

Age and Race: Excluding the two cases of pyometrium which ruptured into the peritoneal cavity and which will be discussed separately, the age range in the 42 inflammatory adnexal masses which ruptured in the same site (table 1) was from 16 to 62 years, and 17 patients were 40 years of age or older. In Brickner's[3] collected series the range in the cases in which the age was stated was from 13 to 59 years, and nine patients were over 40 years of age. A number of other patients in whom the accident was reported were in middle life or older, and the age incidence is worth emphasizing because of the general though incorrect belief that infectious pelvic disease occurs almost exclusively in young women in the early childbearing years.

Race is not mentioned in most of the cases reported in the literature but it may be assumed that the majority of the patients were white. In the Charity Hospital series rupture occurred in 33 negro women, as compared with nine white, which is about the proportion in which pelvic inflammation occurs in the two races.

Etiologic Factors: In two cases in the Charity Hospital series the onset of symptoms occurred immediately after a fall. In another particularly clearcut case symptoms began almost immediately after the patient, while hanging up clothes in the yard, was butted in the abdomen by a goat. In three cases the onset followed so closely upon pelvic examination that a cause and effect relationship seems undoubted; probably a number of other cases would have fallen into this category had the records been more complete. In six cases the patients, all negroes, took purgatives following the onset of pelvic pain. Whether in these instances purgation precipitated rupture, or whether rupture had already occurred and was merely aggravated by the medication, it is not possible to say. There seems no reason, however, why purgation under such circumstances would not have somewhat the same deleterious effect as it has in appendiceal inflammation.

Opinions differ as to the importance of trauma as a factor in the rupture of pelvic masses. Some writers suggest that rupture is unlikely in its absence. The accident has been reported after lifting a child; after climbing stairs; after blows of various sorts over the abdomen; after abortion and labor; after coitus; and after gynecologic procedures such as dilatation and curettage of the uterus and the use of cupping glasses on the cervix. It seems fairly frequent, as in the Charity Hospital series, after bimanual examination; in one of Brickner's[3] cases it occurred after pelvic examination on the operating table, while the patient was being anesthetized for operation. Frank[6] reported a most unusual case in which an adnexal abscess ruptured 36 hours after a third tubal insufflation, each of which had revealed the fimbriated end of the tube to be closed.

Pathology and Bacteriology: Twenty-one of the 42 patients had recent infections lasting, on the basis of the clinical picture, from a few days to four weeks. The other 21 had had recurrent acute attacks, and many were being cooled in preparation for surgery. Although positive statements cannot be made on this point, it seems reasonable to assume that rupture is more likely to occur in fresh cases, when the tubal wall is thin and adhesions are either lacking or are fragile, than in older cases, in which thick adhesions have developed. Rupture seldom occurs at the uterine cornu but may occur at any other point. The opposite tube and ovary are frequently though not always involved in the inflammatory process. Gangrene of the adnexa, which is reported in occasional cases in the literature, was found in one of the Charity Hospital cases, and thrombosis of the iliac veins was found in two instances. In one case a ruptured ovarian abscess was associated with a ruptured pelvic abscess. When the rupture was on the right side a contiguous inflammation of the appendix was occasionally observed.

Bacteriologic studies are scanty in the literature, and my own series is unfortunately also lacking in this respect. In come cases in which examinations were made cultures were sterile, and such cultures as were positive revealed the organisms, in a few instances, cases in which they were made, and showed pneumococci and *E. coli communis*, respectively, in the other two.

Clinical Picture: Clinically the cases at Charity Hospital fall into two groups, just as do the cases reported in the literature. One group presented all the symptoms and signs of an acute abdominal catastrophe, including violent pain, vomiting, and tenderness and rigidity, usually associated with shock. In the second group the symptoms and signs were chiefly those of acute pelvic inflammation, including pain, nausea and vomiting, menstrual and urinary disturbances, diarrhea, chills and fever, tenderness, rigidity and distention. In the extremely acute cases it was usually possible to determine the exact moment at which rupture occurred. In less acute cases it was usually impossible to determine the time of rupture, nor was it always possible in either group to determine which symptoms and signs were due to the basic pelvic disease and which to the superimposed accident.

Diagnostic Considerations: The literature indicates that the diagnosis of a ruptured pelvic mass is seldom made either before operation or, if operation is not done, before death, and the Charity Hospital series substantiates this observation. The diagnosis was set down as a possibility in only two of the 42 cases, and carried no conviction in them, though ruptured viscus, including perforated peptic ulcer, was considered as a diagnostic possibility in 12 other cases. Phases of the clinical picture, as well as the failure to consider rupture of pelvic masses as a possibility, are evident in the variety of diagnoses considered, which included, in addition to pelvic inflammation, ectopic pregnancy; tubo-ovarian abscess; fibroids, which were actually present in six cases; ovarian cyst with twisted pedicle; septic abortion; septic endometritis; pneumonia; typhoid fever; and acute appendicitis, which was perhaps the most popular diagnosis.

The known presence, followed by the demonstrated disappearance, of a pelvic mass is the most helpful diagnostic sign, but it was present, according to Sabadini,[4] in only five of the cases reported prior to 1932. Three of these cases were recorded by Boldt, whose diagnostic achievement seems without equal. The disappearance of a known mass was noted in two Charity Hospital cases, but the significance of the observation was unfortunately not realized.

Brickner[3, 13] suggested as a usefulprodromal symptom the presence of repeated attacks of increasingly severe pain for longer or shorter periods, to be explained by a sudden increase of tension in the abscess sac, "ulcerative advances" in the tubal wall, or "progressive rupture" in the absence of protective adhesions. The violent pain which presumably indicated the actual rupture was preceded in 13 instances in the Charity Hospital series by exacerbation of the chronic pain from which the patients had suffered from varying periods of time, but the observation was usually made too late to be of any diagnostic value.

Management: In spite of the evidence of the Charity Hospital statistics as to the possibility of rupture of pelvic masses, I still believe that we are correct in treating conservatively the usual patient with pelvic inflammation. I think, however, that we shall have to revise our ideas as to how long conservatism is safe, and I know that we shall have to observe our patients, both in and out of hospital, with much greater care if we are to avoid more of these tragic accidents.

Certain cases in the Charity Hospital

series bear out these statements. Thirteen patients were in the Hospital when the accident occurred, all of whom died except one who was operated on immediately after the mass had been ruptured during a bimanual examination; the only other patient in this group who was operated on died four hours after operation and nine hours after the rupture. Another patient who had been sent home to cool preparatory to operation, after seven days in hospital, returned in shock 24 hours later and died within 11 hours. Still another patient applied for admission for abdominal pain, was examined, and, after a tubo-ovarian abscess was found, was sent home to cool. She suffered her rupture on the way home, the accident apparently having been precipitated by the pelvic examination. She was operated on within two hours but died 14 hours later. Many of these cases seem to support the statement made by a number of writers that the most unsafe place to suffer a surgical catastrophe is in the hospital, under direct medical observation. Others bear out Young's[13] warning, that patients with pelvic masses should not pass from observation without operation unless they and their families are warned of the possible risk of rupture.

When rupture has actually occurred, the patient's life depends on prompt operation, and Brickner's[3, 13] point seems well taken, that recurrent attacks of increasingly acute pain in a patient with known pelvic inflammation should be regarded as in indication for immediate operation, with the object of forestalling rupture. Removal of the affected adnexa is obviously the procedure of choice. Feeney[5] advocates only drainage, for two reasons, that pus does not continue to discharge from a tube, as it does from the appendix, and that an intense inflammatory reaction in lymphadenoid tissue does not occur in the tube, as it does in the appendix. Sabadini[4] advocates disinfection of the peritoneal cavity and the use of a Mickulicz drain. In spite of his report of two cases successfully treated by this method, I question its wisdom.

Twelve of the 42 patients with ruptured pelvic masses at the New Orleans Charity Hospital were operated on. Simple drainage was carried out in eight cases, with six deaths; salpingo-oophorectomy in two cases, with one death; and removal of the adnexa combined with supravaginal hysterectomy in another case, which was fatal. In one of the two remaining cases adhesions were released, the exact pathologic process remaining unrecognized until necropsy, and in the other, in which the rupture was also unrecognized until necropsy, ligation of the vena cava was carried out, in an attempt to control thrombosis of the iliac vein.

Sulfanilamide or one of its derivatives was used locally or parenterally in nine of the 16 cases treated in 1939 and thereafter. Powdered sulfanilamide was instilled into the peritoneal cavity in three surgical cases, with survival in one instance, and parenteral chemotherapy was used in two other surgical cases, in both of which the patients survived. It is highly significant that these three patients are the only ones who survived in the whole group of 52 cases, and equally significant that chemotherapy in the absence of surgery apparently does not alter the course of events in rupture of pelvic masses.

Prognosis: The categoric statement can be made that in the absence of prompt surgery the patient's doom is apparently sealed. Even when operation is done the mortality is very high. Some of the patients in the Charity Hospital series died within three or four hours of the onset of the symptoms and signs which indicated rupture, several died on the operating table, and no patient whose exact time of rupture could be determined lived longer than 48 hours without operation.

The Charity Hospital statistics parallel those in the literature. In the 91 cases collected by Brickner[3] in 1912 the death rate was 100 per cent in the 36 non-surgical cases and almost 33 per cent in the 55 surgical cases, the mortality rising proportionately according to the length of time which elapsed between operation and rupture; there were only seven recoveries in the 27 cases operated on after 48 hours. The surgical mortality in the series collected by Sabadini[4] in 1932 was 45 per cent. Martz and Foote[10] in 1939 stated that the original over-all mortality of 50 to 60 per cent had declined approximately 20 per cent in the preceding 25 years. I can see no reason for such optimism, nor does their own statement support it, that no case is on record of recovery without surgery, and that death is the rule if operation is delayed more than 48 hours. The routine use of chemotherapy, as the Charity Hospital figures suggest, should greatly improve the chances of a patient in whom the diagnosis is made and operation is performed without delay, but diagnostic suspicion, unfortunately, does not seem to have kept pace with advances in therapy.

Rupture of Pyometrium: The two cases of rupture of pyometrial collections into the peritoneal cavity via the tube are of considerable interest. The first patient, a 45 year old negro woman, had an enormous abdominal enlargement which had developed over a five month period. She had lost 50 pounds and presented an extremely poor surgical risk. Exploratory laparotomy revealed an inoperable condition of undetermined origin but assumed to be papillocystadenoma of the ovary. Postmortem examination, however, showed that leiomyomato had undergone red degeneration, resulting in a pyometrial collection which extended into the tube and ultimately ruptured into the paritoneal cavity. The second patient had carcinoma of the cervix, which had been treated by radium, and was in the hospital for terminal care. As in the first case, a pyometrial collection extended to the tube and ultimately ruptured into the peritoneal cavity. Both cases represent a possible though apparently unusual complication of pyometrium, which could be prevented by prompt recognition of the intrauterine suppuration and the prompt institution of drainage.

Accidental Rupture of Pelvic Masses at Operation: Over the six year period ending in 1942 the records of the New Orleans Charity Hospital show that suppurative pelvic masses were accidentally ruptured at operation in 97 cases (table 1). Seventy-eight patients were negro and 19 white. The age range was from 17 to 56 years, and 47 patients were 40 years of age or older. Six died, four of peritonitis, one of shock on the operating table, and one, probably, of embolism. In 30 cases the spill was stated to be massive, but only one of the six deaths occurred in this group. The procedure in the fatal cases included unilateral removal of the adnexa in two, and bilateral salpingo-oophorectomy and hysterectomy in four. Appendectomy was done in one of the latter cases, and on the surface seems a most unwise procedure, in view of the contamination of the peritoneal cavity by the spill of pus. On the other hand, 21 other patients whose appendices were removed under the same circumstances made smooth recoveries.

The absence of serious consequences in most of these cases, as compared with the catastrophic consequences of rupture of pelvic masses in the group of cases previously discussed, is open to several explanations: (1) many, though by no means all, of the patients have been thoroughly cooled before operation, and the pus, on the basis of the findings in similar cases, can be assumed to have been sterile; (2) the general peritoneal cavity was usually well packed off when the rupture occurred; (3) the accident in every case was recognized at once, and the spilled pus was promptly and probably adequately removed by suction and other methods; (4) intraperitoneal chemotherapy was used in most of the recent cases. Three of the six deaths occurred before this practice was general, the fourth patient died on the operating table, and it is perhaps significant that chemotherapy was not employed in either of the two remaining fatal cases. Drainage or its omission seems to have played no special part in the outcome, since it was not used in most of the 97 cases. Whether or not these explanations are correct, it seems clear that the rupture of pelvic masses at operation in no wise approaches the seriousness of the accident when it occurs spontaneously.

INTRA-INTESTINAL RUPTURE OF PELVIC MASSES

Like all surgeons, I have personally observed a number of cases in which a pelvic mass ruptured into the rectum and the patient, as a result, was spared the necessity of surgical drainage. The outcome of rupture into the intestinal tract, however, is not always so good. In six such cases at Charity Hospital there were five deaths. Two patients were white and four negro, and the age range was from 25 to 36 years. All were in poor condition when they were first seen. A brief summary of each case is appended:

1. The only patient who survived was submitted to abdominal drainage for long-standing pelvic suppuration, following which a fecal fistula developed. At the second operation, at which time she weighed 71 pounds, it was found that a left tubo-ovarian abscess had ruptured into the signoid. After a stormy convalescence following bilateral salpingo-oophorectomy, complete hysterectomy, excision of the fistulous tract, and repair of the sigmoid, she eventually recovered completely.

2. The patient was submitted to colostomy for intestinal obstruction as the result of pelvic inflammation. Several months later, when an endeavor was made to clear out the pelvis and close the colostomy, it was found that a tubo-ovarian abscess had ruptured into the ileum. Death occurred shortly after operation, probably because the operation performed was far too extensive for a thoroughly toxic subject.

3. The patient was submitted to colostomy for intestinal obstruction as the result of pelvic inflammation, dying shortly afterward. A tubo-ovarian abscess which had ruptured into the rectum was found at postmortem, and a review of the history seemed to indicate that the accident had occurred about 48 hours before operation.

4. The patient, on the third day after colostomy for intestinal obstruction due to pelvic inflammation, complained of violent abdominal pain, went into shock, and died within a few hours. Postmortem examination revealed a fresh rupture of a left tubo-ovarian abscess into the rectum.

5. The patient died on the operating table and it was not clear when rupture of a tubo-ovarian abscess into the rectum had occurred.

4. The patient died suddenly of thrombosis of the basilar artery, and at postmortem examination communications were found between the rectum and a pelvic and a right tubo-ovarian abscess. In neither this nor the preceding case is it clear how much part the rupture played in the fatal outcome.

There is not a great deal to be said about these cases except to emphasize again that rupture of a suppurative pelvic mass into the intestine is not necessarily a favorable event for the patient and is best prevented by timely and adequate drainage of the mass. It must be granted, however, that this accident is by no means uncommon and is frequently not lethal; it probably occurred in a number of other nonfatal cases at the New Orleans Charity Hospital which were not located by the methods used in this investigation.

INTRAVESICAL RUPTURE OF PELVIC MASSES

Rupture of suppurative pelvic masses into the bladder and other portions of the urinary tract is not a usual event, though in view of the regional anatomy and the frequency of suppurative pelvic processes, it is curious that it does not occur more often. Apparently the vesical wall is singularly resistant to contiguous infection.

The number of recorded cases is small. Falk and Hockman,[14] who collected 21 cases from the literature in 1939, added three personal cases, and Donohue[15] recorded another in 1940. The latter case was a remarkable instance of scarlet fever followed by metastatic infections in various parts of the body, including peritonitis, an ovarian abscess, a mastoid abscess, and finally a pelvic abscess which ruptured into the bladder.

All three cases observed at the New Orleans Charity Hospital (table 1) occurred in white women, whose ages ranged from

23 to 36 years of age. In two instances it was possible to determine from the patients' histories exactly when the rupture had occurred. In both instances excision of the diseased pelvic structures was followed by prompt closure of the fistula, in one instance involving the bladder and in the other the intraligamentous portion of the right ureter, which showed a cystic dilatation almost its entire length. The third patient had had a cauterization of the cervix five weeks after an early abortion and had developed a pelvic abscess which ruptured through the vagina. Chemotherapy, and cul de sac drainage twice, at intervals of 18 months, produced only transient improvement, and the failure was explained by subsequent cystoscopic demonstration of the vesical fistula, the bladder capacity having been reduced to four ounces. The patient declined to consider surgery and left the hospital in such poor condition that death probably occurred shortly afterward.

SUMMARY AND CONCLUSIONS

1. The records of the Charity Hospital of Louisiana at New Orleans show that during a recent 17 year period 44 pelvic masses ruptured spontaneously into the peritoneal cavity, six into the intestinal tract, and three into the urinary tract. During a recent six year period 97 inflammatory masses were accidentally ruptured into the peritoneal cavity in the course of operation.

2. A review of the literature shows that most spontaneous ruptures of pelvic inflammatory masses are reported singly or in small groups, a circumstance which has probably supported the concept that the accident is rare. Actually, while it is uncommon in contrast to the frequency of suppurative pelvic processes, it is apparently an important cause of death in pelvic inflammations.

3. Without operation the mortality in spontaneous rupture is 100 per cent, and unless operation is done very promptly the surgical mortality is also high. The death rate in pelvic masses ruptured accidentally at operation, though higher than the general death rate for pelvic inflammations treated surgically, does not approach the death rate of spontaneous rupture.

4. The justification for such a report as this lies in the statement made by Brickner in 1912, that "... it is worth while to record all instances observed in order to determine the clinical features of this disastrous accident and to learn, if possible, how an impending rupture may be recognized and forestalled."

5. The fact that the rupture of suppurative pelvic masses is not uncommon and that the accident is attended with a tragically high rate should not be interpreted as an argument for the radical treatment of pelvic inflammations but rather as a warning that patients in whom conservative therapy is practiced must be kept under constant careful observation.

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INFILTRATION THERAPY OF SUBACROMIAL BURSITIS with CALCIFICATION

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While it is difficult to determine the exact incidence of subacromial bursitis with calcification, our experience on the orthopedic service of a Station Hospital leads us to believe that the condition is quite common.

Calcium deposits in the soft tissues about joints have in recent years become a major surgical problem, both in civilian and military life and has been variously reported as bursitis calculosa; calcifying bursitis; tendinitis calcificans; peritendinitis calcarea; perarthritis; but most frequently as bursitis with calcification.

By far the most common site of calcified tendinitis is the subdeltoid location. Following in frequency are the trochanteric and the medial tibial collateral ligament near the adductor tubercle, often called Pellegrini Stieda's disease.

Growing experience with the general condition of so-called calcareons tendinitis seems to indicate rather convincingly that it is a real clinical entity, having a typical pathology and symptomatology.

PATHOLOGY

Pathologic studies have been reported of the various areas in which calcification occurs, and the findings have been quite consistent. Practically all seem to indicate that the condition is secondary to a degenerative change in the tendons, or adjacent ligaments or capsular structure. The most conspicuous histologic feature is the degenerative change in the fibrous tissue.

The degeneration may vary in degree, from trivial loss of microscopic detail in the connective tissue, to a true necrosis. In such areas apparently because of deficient blood supply, calcium is deposited in the form of calcium phosphate or of calcium carbonate, or a molecular combination of both. The calcified areas increase in size, coalesce to form larger masses which lie in cavities in or near the tendon.

In 1908, Codman, operating on a subdeltoid bursitis, made the important observation that the deposit was not in the bursa, but beneath its base, and in or adjacent to the tendon of the supraspinatus. Since that time many others have substantiated the intratendinous location of the deposits. The large subdeltoid bursa lies between the deep surface of the deltoid muscle, the acromial arch and the lateral surface of the shoulder joint. The supraspinatus tendon which is fused into the superior part of the capsule of the shoulder joint, forms much of the floor of the bursa. It is therefore evident that the primary pathology is in the supraspinatus tendon, and that the bursa becomes involved only secondarily. The motion of the bursa over the calcified area in the tendon and pressure on abduction against the acromial process cause it to become irritated, swollen, and painful. The deposits have been known to rupture through the floor of the bursa into the bursal sac.

SYMPTOMS

The patient with a subacromial bursitis with calcification may complain of pain in the shoulder, often radiating into the forearm and hand; of subjective numbness of the upper arm; of inability to carry out certain movements, especially placing the hands in the hip pockets; lifting an object; combing the hair; or of pain at night which awakens him and forces him to find a more comfortable position. The course of the illness is variable and may in some cases extend over a period of years; spontaneous recovery may occur, but often not until after several months of pain and disability.

PHYSICAL EXAMINATION

Any motion of the shoulder that produces motion of the supraspinatus tendon causes pain. This is most marked in abduction, and external rotation, and least in internal rotation. There is usually a localized area of tenderness on pressure over the greater tuberosity, just below the acromial process.

With the x-ray it is possible to diagnose the existence of calcified deposits accurately. It will reveal them in the tendon though they are usually interpreted as lying within a bursa.

We should state that although the x-ray studies reveal no calcification a bursitis might still exist, without calcification. Such a condition can be ruled out by infiltrating the bursa with 1 per cent novocaine, and if all the symptoms subside, the diagnosis is probably a bursitis without calcification.

The condition must be differentiated from: (1) arthritis of the acromioclavicular joint; (2) bicipital tendovaginitis; (3) supraspinatus tendon tears; (4) subcoracoid bursitis, and (5) scaleneus anticus syndrome.

TREATMENT

For the past year, on the orthopedic service of the Station Hospital, all cases of subacromial bursitis with calcification have been treated by infiltration therapy. The technic is simple, and one does not have to be a specialist to carry it out. Neither does it require any special equipment. The tender spot in the shoulder is located and the skin over the area is infiltrated with 1 per cent novocaine. The infiltration is carried down to the cortex of the head of the humerus. With the needle in place its position is checked either by the fluoroscope, or by x-ray plates to make certain the needle is in or near the calcified deposit. This is most important. Failure to do so, and doing the procedure blindly, is the cause of many failures. Though we have done a fairly large number of cases, we still often find the point of the needle some distance from the deposit, when we insert the needle blindly and later check the position by the fluoroscope. After adequate analgesia has been obtained and with the point of the needle in or about the deposit, the point of the needle is withdrawn two or three millimeters, and an attempt is made to aspirate calcareous material. This is usually not successful, and we have come to the conclusion that aspiration and washing out of the bursa is not necessary, as repeated postoperative roentgenograms made at regular intervals will show the gradual disappearance of the deposit within several weeks. With the needle in place, 30 to

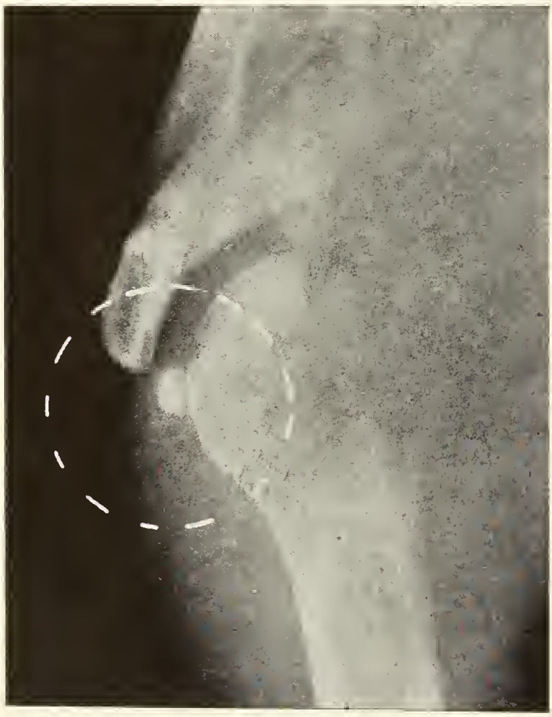

Fig. I. Roentgenogram of right shoulder taken on 12-3-43 showing a large dense calcareous deposit.

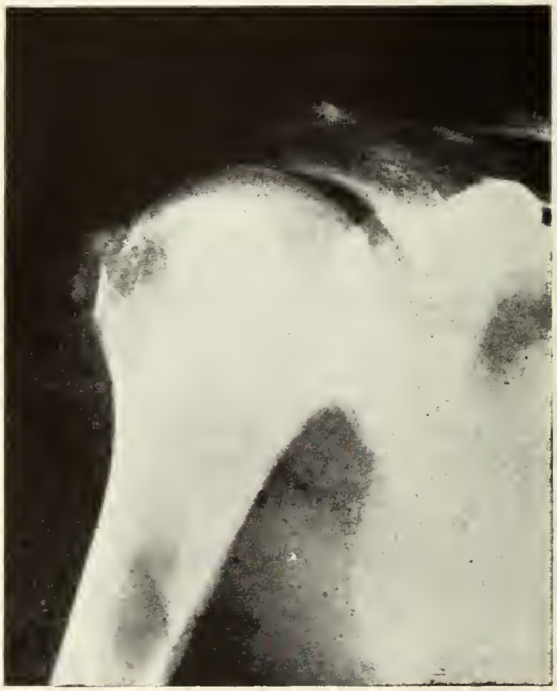

Fig. II. X-ray picture eight weeks after infiltration therapy, showing complete disappearance of the deposit. (Photography by U. S. Army Signal Corps.)

50 cubic centimeters of warm saline solution are slowly infiltrated into and close around the deposit, at the same time numerous punctures are made into the bursa.

The treatment, if applied correctly, usually gives immediate relief, only to be followed by an increase in symptoms for the first 24 hours. We encourage our patients to get under the shower and limber up the shoulder by mild exercise for the first few days. Usually after four days there is complete relief of pain. Serial postoperative roentgenograms made at regular intervals will show disappearance of the deposit, usually within six to eight weeks. Occasionally it is necessary to repeat the procedure if the deposit does not disappear or show decrease in size after four to six weeks, or if symptoms persist. Symptoms disappear long before the deposit is absorbed. However, if the deposit persists, we repeat the procedure, until there is no further x-ray evidence of the deposit being present.

In the past year, on the orthopedic service of the Station Hospital, eighteen cases of subacromial bursitis with calcification were seen. The average age of the patient was thirty-four years. Only four gave a history of trauma. The duration of symptoms varied from ten days to three years. The right shoulder was involved fourteen times, the left four. Two patients had bilateral calcifications. Five patients of the group required more than one treatment, of these four were given two treatments, and one three. Three patients who had two treatments had no decrease in size of the deposit and did not return for further therapy. The patient who had three treatments, showed the deposit decreased in size considerably. Repeated roentgenograms still show a small deposit present.

Of the patients treated, 77 per cent responded favorably, the average time of disappearance of symptoms was six days, of the deposits, seven weeks.

COMMENT

The calcium deposits in these cases of subacromial bursitis, or more accurately, calcified tendinitis, had undoubtedly been present long before the symptoms. One of our patients gave a history of having symptoms only ten days. It is hardly probable that calcifications developed in such a short period. However, that they can develop in a comparatively short time is illustrated by the following case. One of our patients, a prisoner of war, complained of pain in his knees, x-rays were negative, six weeks later the patient was re-rayed, this time there was a calcified deposit in the medial tibial collateral ligament near the abductor tubercle.

The mechanism which precipitates the acute symptoms, as well as the general etiology remain entirely obscure. Infections and trauma are mentioned most frequently as possibilities. The fact that fourteen out of eighteen cases occurred in the right shoulder leads us to believe that the additional trauma of use in right handed individuals might be an important factor.

CONCLUSIONS

1. Subacromial bursitis with calcification most commonly occurs at the right shoulder joint in right handed individuals.
2. The average patient age in our group of cases was 34 years.
3. The trauma of use and infection are mentioned as possible etiologic factors.
4. Infiltration therapy has given excellent results in our series of cases presented.
5. Treatment is accompanied by relief of pain, and by gradual disappearance of the deposit.

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TULAREMIA

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The widespread distribution of tularemia, the more general awareness and increasing recognition, the atypical expressions leading to difficulties in diagnosis, the prolonged morbidity and case fatality rate (in our series,[1] 7.55 per cent) and the large number of insect and animal reservoirs of the disease establish it as of more than academic importance. Tularemia should be considered in the diagnostic possibilities of a large variety of acute febrile illnesses, such as influenza, psittacosis, atypical pneumonia, brucellosis, typhoid, tuberculosis, infectious mononucleosis, leukemias, lymphomas, fungous infections and diverse diseases of various types accompanied by septicemia and bacteriemia. Despite the appearances of tularemic buboes and regional lmyphadenopathy, tularemia does not long remain a localized disease but soon develops a general septicemia. Like plague, therefore, tularemia should be regarded as general sepsis in which both bacteriemia and septicemia appear. Consequently the clinical manifestations may be variable indeed and it is the purpose of this discussion to summarize the methods of diagnosis and the treatment of tularemic infections.

CLINICAL MANIFESTATIONS

Incidence. Since the discovery of tularemia as a "plague-like disease of rodents" among California ground squirrels by McCoy[2] in 1911, recognition of the disease has become increasingly frequent so that it is estimated[3] that 2,000 cases annually are reported in the United States at the present time. It is doubtful, however, that this represents an apparent increase of the disease but merely increasing recognition. In the Charity Hospital of Louisiana at New Orleans, 225 cases of tularemia were observed in the period from January 1, 1928, to July 1, 1944. The greatest number of cases occurred in 1940 with the next highest incidence in 1935. For some unexplainable reason there has been a considerable fluctuation of incidence from season to season and from year to year. In recent years, there has been a progressive, significant reduction of the number of cases which may be correlated in part to the reduction of hunting during recent seasons as well as increased knowledge of prophylactic measures among the lay population. We should point out that cases of tularemia are seen in the hospital wards at all times of the year, although the greatest number obviously occur in December, which is at the height of the hunting season.

There are no significant differences in racial susceptibility, negro and white patients being equally affected. Likewise, both sexes and all ages may readily acquire the disease although males by virtue of their occupational pursuits show a slight preponderance. Thus, the youngest patient in our group was a white girl of the age of three years who was bitten by a captive wild rabbit and the eldest patient was a colored male of 73 years.

Contacts. Tularemia occurs most frequently among those occupational groups who handle infected animal flesh, such as hunters and trappers, butchers, cooks and housewives, or those exposed by the nature of geographic location or occupation to the bite of deer flies, ticks or stable flies. Tularemia is a widespread septicemia among a large section of the animal population of this country, hence historical inquiry into the number and type of contacts must consider a wide variety of possibilities. In general it is estimated that 90 per cent of the infections in the United States follow exposure to the tissues or secretions of the cottontail rabbit, jackrabbit and snowshoe hare. The literature, however, records a large group of rodents, gallinaceous birds, and such animals as the dog, cat, coyote, fox, hog and sheep. In addition, ingestion of infected meat and transmission by such insect vectors as the horse fly and deer fly, the dog tick and the wood tick, fleas and lice are responsible for an occasional case of tularemia. The diversity of the animal contacts capable of transmitting the disease to man account for a varied location of the primary lesion and regional lymphadenopathy, a point which we shall emphasize in a moment.

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Clinical Picture. As originally proposed by Francis, it is customary and convenient to classify tularemia into four different types, depending upon the predominant expressions of the disease process: (1) ulceroglandular; (2) oculoglandular; (3) glandular; and (4) typhoidal or febrile form of disease. Clinical recognition of the first two forms is not usually difficult if the examiner obtains a definite history of recent animal contact. Recourse to the laboratory is essential for the diagnosis of the latter two types. It should be emphasized, however, that this classification is entirely a clinical one and that the manifestations of tularemia, as with any acute infection characterized by both a septicemia and a bacteriemia, are variable indeed.

The incidence of the various forms may be deduced from our studies of 225 cases as follows: ulceroglandular, 181 cases or 80.4 per cent; oculoglandular, 7 cases or 3.1 per cent; glandular, 23 cases or 10.2 per cent; and typhoidal, 14 cases or 6.2 per cent. The percentage of glandular cases in our group is higher than the average recorded in the literature (3 per cent) which suggests that the primary lesion in many of our cases may have been overlooked either by the physician or the patient before coming to the hospital. As a result, the type frequency of the ulceroglandular variety in our group is lower than the experience of others (87 per cent).

Following an incubation period of two to six days (average for our series, 4.6 days), the onset of tularemia is rapid, acute and characteristically severe with generalized body aches and pains, chills, fever (up to 104° F.), headache, nausea and vomiting, muscular prostration and profuse sweating. Within 48 hours, the primary lesion or buboes appear. As a rule the primary lesion precedes the development of the buboes. The location of the primary lesion varies, depending upon the mode of transmission. In our series of 225 cases of tularemia, a primary lesion developed in 188 cases. In 175 instances it was located on the hands or fingers, and was about equally divided between the two hands. Multiple primary lesions developed in four patients, and in one patient four separate primary lesions were noted. Seven of our patients were instances of ophthalmic tularemia with the development of a severe conjunctivitis. The remainder of the primary lesions were observed in varying locations, such as the forehead, right shoulder, right axilla, right knee, right elbow and left inguinal region. These latter instances were the result of tick bites. There were no instances in our group of oral or pharyngeal involvement, which are infrequent sites in the literature. As just mentioned above, not all patients develop a primary lesion, 37 of our group of 225 cases failing to do so.

Following the papular stage, ulceration of the primary lesion occurs which cannot be distinguished by its clinical appearance alone. A central necrotic core is liberated, the edges of the ulcer are elevated, and the base is ragged and necrotic. Rarely can *Bacterium tularense* be isolated from the lesions by ordinary bacterial smears. Secondary infection occurs frequently. The ulceration is usually painful and quite indolent, the shortest healing time in our group being nine days while the longest was 104 days, averaging about 32 days for the entire series. We may point out that the ophthalmic variety consists of a severe conjunctivitis with redness, congestion, photophobia and lacrimation.

Regional lymphadenopathy or the formation of buboes is part of the clinical picture of tularemia. Usually the process consists of a progressive, painful, tender enlargement of the lymph nodes and in the beginning at least they are usually discrete and firm to touch. One particularly characteristic feature of tularemia is the absence of visible lymphangitis between the primary lesion and the regional buboes, unless severe secondary infection of the primary lesions has occurred. Extension of the disease beyond the regional lymph nodes may occur and it is not unusual to find generalized lymphadenopathy or bilateral lymphadenopathy when only one ulcer is present. Ttypical lymphadenopathy occurs sufficiently often that tularemia must be considered in the diagnostic possibilities of generalized or other unexplained lymphadenopathy. To illustrate, one of our female patients manifested a noddular type of lymphadenitis which extended from the axillary nodes along the pectoralis muscle to involve the breast. Malignancy was suspected and a biopsy was taken. Another instance of confusion was that of a white male with lymph node enlargement in the left supraclavicular fossa which was thought to be metastatic from a primary malignancy elsewhere. Cervical lymphadenopathy follows the ophthalmic infection with tularemia. In our experience cervical lymphadenopathy in the other varieties is infrequent, occurring in but 14 instances of our entire series. In passing we may state that the spleen is palpable in almost half of the patients with generalized lymphadenopathy as well as those patients with the typhoidal form of the disease. The liver was felt less often but enlargement does occur.

Suppuration of the lymph nodes occurred in 22.2 per cent of our group. Such glands either ruptured spontaneously or were incised after evidences of imminent rupture appeared. Subsidence of the lymphadenopathy in tularemia is very slow, averaging 46.4 days in our group with a range from 17 to 219 days.

As stated in the beginning, it is the purpose of this paper to emphasize the fact that the primary lesion with the regional lymphadenopathy does not comprise the entire clinical picture of tularemia, however frequent this may be. Subcutaneous, lymphangitic nodules, which are usually firm, movable and non-tender, were observed on the arm or forearm along the route of lymphatic drainage in 8.0 per cent of our patients and in a few cases proceeded to suppuration. Such lesions resemble closely those of sporotrichosis.

In 8.44 per cent of our group, a skin eruption occurred and was variable in type. In about half of our patients the eruption was diffuse and papular, although a papulovesicular eruption has been described. In others it was in the form of erythema nodosum. We may point out that the cutaneous eruption usually developed during the second or third week of the illness and persisted for a few days to three or more weeks. It was generally bilateral, symmetrically distributed and appeared most prominently on the arms and neck. Herpes labialis was observed in a few cases.

Cough is observed frequently during the first two or three weeks of illness. Pneumonia developed in 30 patients of our group, an incidence of 13.33 per cent. Seven patients likewise developed pleural effusions. We could fulfill the criteria for tularemic pneumonia in only 21 of these 30 patients, an incidence of 9.33 per cent, the remaining cases resulting from secondary infection. These have been reviewed elsewhere.[4] We may say, however, that the pneumonic process may be described as a hematogenous bronchopneumonia which usually begins at the hilus and extends peripherally producing confluence and variable pleural reaction. The symptoms and physical findings will accordingly be variable and at the beginning may be absent. As one would expect, pneumonic involvement is more frequent in the typhoidal forms of the disease but every patient with tularemia should be carefully observed for the possible development of pneumonia. The mortality rate for our patients with tularemic pneumonia was 57 per cent, thus indicating the seriousness of this complication.

Stupor, meningismus, stiffness of the neck and other evidences of central nervous system involvement may occasionally occur. One of our patients was found to have tularemic meningitis[5] upon autopsy.

Venous thromboses occurred in but three patients, the femoral vein being involved twice and the antecubital vein once. Several other conditions were found to be associated with the disease but they did not influence nor were they affected by the tularemic infection.

Course. The course of the illness is chronic and prolonged. Fever occurs in all patients though it may be low grade, intermittent from the onset, and lasts but a few days. In the majority of cases, however, the febrile episodes last for three to four weeks and during this time the constitutional symptoms of malaise, chilliness, muscular weakness, prostration, profuse sweating, anorexia, nausea and vomiting and loss of weight may be quite variable. At best it is rare for the patient to return to work before the second month. In a few of our patients, malaise, weakness, fatigue and lack of a sense of well being persisted upwards to a year. As a consequence the duration of hospitalization in these patients is of considerable importance. The average for our group was 22.35 days and in one patient 144 days of hospitalization were required. Prolongation of illness beyond the periods described above may result from a variety of factors such as delayed suppuration of the buboes, bronchopneumonic involvement and sequelae, and tularemic infection of serous cavities.

The seriousness of tularemic infections has not been appreciated to the degree that they deserve. The mortality rate for our series of 225 patients was 7.55 per cent. It is our impression that negroes manifest less resistance to tularemic infections than do white patients, particularly to the pneumonic forms of the disease. This is borne out by the observation that 12 of 93 negroes (12.9 per cent) died from tularemia as compared to only five of 132 white patients (3.8 per cent). Whether such racial susceptibility may be related to diet or nutrition, environment, lower standards of living or other factors controlling immunity we are unable to state.

The chief cause of death in most of the patients may apparently be attributed to septicemia and toxemia from tularemia. Thus pneumonia was the chief lesion, although meningitis and other findings contributed to the death of one or more patients. The deaths of three of the patients in our series were related to complications arising from therapy: a blood transfusion reaction in one patient, difficulty in controlling diabetes mellitus in another, and a malignant neutropenia following sulfonamide therapy in another. Autopsy of more than half of the patients who died verified the widespread tularemic involvement as evidenced by pathologic lesions in the skin, lungs, liver, spleen and lymph nodes. As one would expect, the mortality rate for each of the four clinical types of tularemia varies considerably: 4.4 per cent for ulceroglandular type, 4.35 per cent for glandular, 14.3 per cent for oculoglandular, and 50 per cent for the typical form of the disease. Death may appear at any phase of the illness, the average duration of disease for our group that died being eight days before death with the shortest duration being 36 hours and the longest 167 days (an instance of chronic progressive tularemic infection).

We have no data in our series concerning relapses of tularemia. The literature records relapses rarely; when they occur, they appear within eight months to two years following the first attack. A second relapse is extremely uncommon. Equally rare is the condition of chronic tularemic infection in which the clinical course is very disabling and characterized by malaise, weakness, loss of weight, intermittent fever, mental as well as physical depression, enlargement of previously affected lymph nodes and spleen, and downhill course. In the majority of patients, clinical recovery confers permanent immunity. Foshay[3] states that subclinical or inapparent tularemic infection has never been demonstrated.

Complications and Sequelae. These are not common. We have already alluded to the seriousness and frequency of septicemia during the course of the tularemic infections. Although known to occur during the first week of illness, it more commonly develops toward the end of the second week and beginning of the third week. The onset of septicemia may be heralded by the following signs: (1) sustained high fever following a period of intermittent variations; (2) gradually deepening coma and stupor; and (3) progressive and at times rapid enlargement of the liver and spleen. The prognosis of tularemic septicemia is admittedly grave.

The sequelae of pleuropulmonary tularemia are bronchiectasis, extensive pulmonary fibrosis, empyema and lung abscess. Rarely seen but recorded are instances of pericarditis, peritonitis, meningitis,[5] encephalitis, enteritis, venous thromboses and thrombophlebitis. More common but less serious are occasional recurrences of lymph node enlargement from one to several years following apparent recovery and in which suppuration of the involved glands occurs in more than half of the cases.

LABORATORY DIAGNOSIS

Clinical diagnosis of the ulceroglandular and glandular types of the disease is not usually difficult if the physician obtains a history of recent contact with a wild rodent, tick bite, or fly bite. The typhoidal form of the disease, however, demands recourse to the laboratory for confirmation of the diagnosis and frequently for establishment. There, too, the physician will do well to recall the geographic distribution and seasonal incidence of tularemia and to interrogate for possible animal contact. We have occasionally been gratified to suspect and later confirm the diagnosis of tularemia in atypical bronchopneumonia by obtaining a history of contact and finding an indolent ulcer on the hand during the course of the physical examination.

Blood Changes. There are no characteristic changes in the blood. Most of our patients revealed a mild secondary anemia, the red cell count averaging from 3,500,000 to 4,000,000 per cubic millimeter. The average leukocyte count was 11,200 with a differential count averaging 70 per cent polymorphonuclear leukocytes, 25 per cent lymphocytes, and 5 per cent monocytes. It is interesting to note that five of our patients had white cell counts of less than 5,000 cells whereas another patient with typhoidal tularemia had a count of 90,000 on admission.

Urinalysis. A transient albuminuria was noted in a few cases and was related to the febrile course.

Agglutinations. The agglutination test for tularemia is extremely satisfactory. Agglutinins never appear before the eighth or ninth day but thereafter a progressive increase in titers occurs up to the sixth week of the illness or beyond. A titer of 1:20 is suspicious and 1:80 is diagnostic. More significant is a progressive or rising agglutinin titer. Cross agglutinations with Brucella may occur; the highest titer usually indicates the primary disease. Agglutinins may persist indefinitely in the serum of patients, possibly for life. One of our patients had a titer of 1:320 seven years following recovery.

Skin Test. The intradermal injection of a killed suspension of *B. tularense* provokes a cutaneous response similar to the tuberculin test. The test is positive in about 90 per cent of patients sometime during the first week of the disease and thus serves to establish a tentative diagnosis before the agglutination test becomes positive. Local necrosis at the site of injection has occurred in about 25 per cent of our patients. Like the agglutination test, the skin test is positive for many years.

Bacteriologic Diagnosis. Examination of stained smears of exudates from the primary lesions, lymph nodes, sputum or serous cavities is virtually useless. A bacteriologic diagnosis is possible during the stage of bacteriemia or septicemia by direct inoculation of the patient's blood on fresh blood-glucose-cystine agar. Even better is the inoculation of the infected secretions or body fluids into guinea pigs or other rodents and then cultivation of the organism from the rodent's heart blood at autopsy. It should be pointed out here that laboratory cultivation of *B. tularense* is extremely dangerous for non-immune personnel.

TREATMENT

As in any acute febrile disease with severe constitutional reactions, symptomatic and supportive care of the patient assume an important part of the therapeutic regime. Although classed as a communicable disease and considered reportable in most cities and states, rigid isolation precautions for tularemia are not necessary as man to man transmission has occurred very rarely.

Medical Regimen. No form of therapy has proved to be consistently beneficial in our experience. In line with other investigators, our series of patients were subjected to a wide variety of therapeutic agents: sulfarsphenamine, neoarsphenamine, roentgen ray, infra-red light, specific serum, human convalescent serum, acriflavine, and the sulfonamides. None of these agents can be said to effect consistent or marked influence upon the course of the disease. Available evidence, though meager, suggests that penicillin likewise has no particular value in the treatment of tularemic infections. Recently Heilman[6] has reported that streptomycin is of value in experimental tularemia. This deserves clinical investigation.

The whole subject of the therapy of tularemic infections has been reviewed recently by Bell and Kahn[7]. These investigators conducted careful animal experiments upon the therapeutic efficacy of the following drugs: sulfanilamide, sulfadiazine, sulfamerazine, acriflavine, metaphen, iodide and bismuth (iodo-bismitol with saligenin), arsenic and bismuth (solution of bismuth subgallate and sodium para-aminophenyl arsonate), trivalent arsenic alone (mapharsen), antimony (stibophen), penicillin and hyperimmune equine antitularemic serum. With the possible exception of penicillin, they concluded that none of the above mentioned drugs possesses any therapeutic value in tularemic infections.

Local Applications. The primary lesions and suppurative lymph nodes have been treated with various local applications: 2 per cent saline compresses, boric acid soaks, magnesium sulfate soaks, roentgen ray, infra-red, acriflavine, 5 per cent sulfathiazole ointment, weakly saturated solution of commercial urea; and occasionally incision. We conclude from our experience that simple sterile dressings kept moistened with boric acid or saturated solution of magnesium sulfate are as effective as any available regimen in affording relief of pain from the buboes. We wish to emphasize that it is our practice never to incise the inflamed lymph nodes until suppuration has occurred and rupture is imminent.

For the eye lesions, local applications of various types have likewise been tried: wet boric acid compresses, argyrol, homatropine, hot saline soaks, 5 per cent solution of sulfathiazole, and hot applications of half saturated aqueous magnesium sulfate. We firmly believe that frequent lavage of the conjunctival sac with warm boric acid-saline solution is of benefit. External, soothing applications to the eye should probably be warm, sterile, and non-injurious; in that regard, the half saturated aqueous magnesium sulfate solution is as good as any agent.

Prevention. General awareness by the lay population of the danger of contracting tularemia in handling and skinning rabbits and other game should be developed not only in hunters but also in meat handlers, butchers and housewives. The use of rubber gloves, although not ideal, will lead to a marked reduction of infection. Thorough cooking of all meat will eliminate the dangers of infection by ingestion. There is no satisfactory method for the prevention of tick and fly bites. Foshay and his associates[8] have reported favorably on the use of a vaccine in the prophylaxis of tularemia. They believe that the disease is not only prevented in a large percentage of instances but greatly modified as well. Laboratory personnel are particularly subject to tularemic infections and should review the prophylaxis and handling of tularemic cultures, tissues and specimens in meticulous detail.

SUMMARY

We have sought to clarify herein the salient points in the clinical recognition and management of tularemia based upon our studies of 225 cases. Attention has been directed to the widespread distribution of the disease, the large number of animal contacts, the atypical expressions, the case fatality rate (7.55 per cent), and the methods of diagnosis and treatment. We have also pointed out that the mortality rate is four times greater among negroes than among white patients. The prolonged morbidity and high mortality of tularemia stamp it as of special importance among infectious diseases. It is regrettable that a satisfactory therapeutic agent has not yet been found.

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VICTORY!

The war ceased abruptly on August 14. It hardly seems possible after nearly four years of war-time regulations that hostilities have stopped. The transition period from war to peace appears at the present time to be more difficult than the change from peace to war. It took the United States several years before they really began active participation in the practically world-wide war and during these two years adjustments to war could be made more deliberately than apparently it will be possible to do so for peace, speaking of the over-all picture.

How the cessation of hostilities will affect the medical profession no one, certainly at the present time, is in a position to say. The physicians in the Army are anxious to go back to civil practice and certainly the doctors who have stayed at home are pretty well worn out because of their additional responsibilities and tremendous increase in the amount of work they have been called upon to do. How soon medical officers will be discharged is a question. Certainly it does not look as if there would be an immediate return of a very great number of physicians to civil life. The large number of casualties who will require months and years of treatment will have to be taken care of by civilian doctors who are in the Army, more particularly those who have specialized training. It will be hard luck for these doctors if they have to be kept in the service for months or even years. It is earnestly hoped that these men will be but few in number and will be willing to answer the call of duty cheerfully.

We can all thank God that the war is over, a war which from the beginning was senseless and useless. The United States emerges as the greatest world power. We and Russia dominate the world and our responsibilities should be world-wide and not limited to this loved country of ours nor to this continent.

SOCIALIZED MEDICINE

There has been considerable activity during the summer both by the protagonists and antagonists of the Wagner-Murray-Dingell bills. These bills have been discussed over the radio, presented in one of the radio forums, have been written up in the newspapers, and medical societies throughout the United States have expressed themselves against any form of socialized medicine. The American Medical Association has drawn up fourteen points which bear reading by the individual members of state, county and parish medical societies. The Physicians Committee for the Extension of Medical Service has sent out much material, including a communication to officers of all medical societies, saying that if the bills are enacted into law the private practice of medicine in the United States would be destroyed. They have also sent out copies of newspaper advertisements, plates of which are available without cost and which it is suggested should be placed in newspapers under the sponsorship of local medical societies, hospital groups, drug stores and similar groups and organizations.

All these efforts show that the leaders of medicine are doing their best to educate the public to the evils of regimented medical practice. The sad and unfortunate thing about these efforts to counteract socialization of medicine is the general apathy of individual members of the profession. There are a few men who are doing their best to counteract governmental interference in medical practice but they are few and far between. Most of the physicians of this country are, it is true, very busy but they could exhibit and should show much greater interest in the socialistic program of the Wagner-Murray-Dingell bills. The attitude seems to be by the profession that the officers of their societies should do all the work. In many other things that are unpleasant, physicians, as do other people, have a habit of not looking at disagreeable things squarely in the face, assuming that such and such a proposal will never come about, or it will not bother them in their life time, they take an attitude which is, to say the best merely neutral. Each and every individual doctor in this country who is a member of organized medicine should do his best to counteract the arguments that are advanced by the people in favor of socialized medicine. They can talk to their clientele, talk or write to their Congressmen and they can appear at public meetings to point out the inherent evils of medical regimentation. It is up to each and every man who is sincerely against the proposals being made in Congress to express himself with vigor and enthusiastically.

THE IMMEDIATE TREATMENT OF CORONARY OCCLUSION

The immediate treatment of coronary occlusion, or myocardial infarction, is one of the medical emergencies which requires prompt and vigorous treatment. It is a condition which is associated with pain and with shock and it is these two indications which first must be combated before giving serious thought, in most instances, to the state of the heart. Pain is an almost inevitable and invariable concomitant of occlusion and as it intensifies and prolongs shock it must be overcome promptly. Morphine is the drug of choice because it is more than likely to relieve the pain promptly than any other analgesic. It should be given in doses sufficient to bring about relief of the cardiac agony. Morphine is by no means the ideal drug because of its vasoconstricting effects on the coronary circulation. Other analgesics have been advocated from time to time such as dilaudid or papaverine. It might be possible in many instances to use papaverine if the pain is not too severe, giving it in doses of 30-80 mg., repeating it if necessary. With morphine, atropine should always be given as it counteracts the effects of this drug on the coronary circulation. As a matter of fact it might be advisable to give atropine more or less routinely with the other two pain remedying drugs.

Circulatory failure which is associated with the shock syndrome is best met by the administration of adrenalin. With shock there is associated severe sweating with loss of fluids and electrolytes. To combat these two indications for therapy, normal salt solution may be given subcutaneously, or 5 per cent glucose in saline solution may be given slowly into the vein. Oxygen should be started at once and immediately. Gilbert insists that it should be employed regularly in all instances but in some of the questionable mild attacks it is doubtful if it is necessary to resort to this therapeutic procedure, unless readily accessible.

Some years ago Levine suggested quinidine to prevent paroxysmal ventricular tachycardia which occurs in 3 per cent of all cases and which may be followed by ventricular fibrillation and death. This form of therapy has not received universal approval and as a matter of fact Levine now apparently recommends it only when there is a very rapid heart rate associated with a considerable drop in blood pressure.

Cardiologists generally advise against the administration of digitalis. It increases the work of the heart and may bring about rupture of a soft infarct; it produces coronary constriction and it is presumed to predispose to paroxysmal ventricular tachycardia. Furthermore, most patients who have coronary occlusion do not have signs of heart failure for the first week or ten days or two weeks after they have their coronary attack. If a patient does exhibit definite signs of failure either of the right heart with a swollen, tender liver, or of the left heart with very marked dyspnea or if auricular fibrillation develops then the doctor should make use of digitalis.

The immediate and prompt and proper treatment of coronary occlusion is often not only life saving at the moment but may prevent heart failure and death in the immediate future. If a patient can be successfully carried over the first phases of his disease it may mean subsequent years of a fruitful and constructive life.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

CURRENT TRENDS IN MEDICINE

In the July 28, 1945 issue of the American Medical Association Journal there appeared a letter signed by Dr. L. G. Rowntree, which read as follows:

"To the Editor: In retiring from Selective Service, after serving as chief of the Medical Division during the last four and one-half years, I have received literally dozens of letters complimenting us on what has been accomplished. Most of these letters, I note, came from physicians. In reading them and in thinking over the situation, it seems to me that the shoe really should be placed on the other foot. Hence I am writing to express the gratitude of the Medical Division of Selective Service to the 35,000 doctors and 10,000 dentists who have contributed so liberally of their time, effort and skill in handling the medical problems of the registrants.

"No other group of people in the nation have given more liberally of themselves in the war than have these professional people. That was the opinion expressed by the late President Roosevelt at one of his wartime conferences.

"The Medical Division of Selective Service in National Headquarters in Washington has enjoyed the complete support of the director, Major Gen. Lewis B. Hershey. It has had also the strong support and superlative leadership from the three Surgeons General of the Army, Navy and Public Health Service, from all the state headquarters and especially from all the state medical officers. The physicians attached to the 6,443 local boards, the consultants on the 660 medical advisory boards supplied all the demands made on them. They met fully and completely the nation's needs in the procurement of manpower for the fighting forces.

"Such service should not be taken for granted nor should it be passed over without acknowledgment. Medicine has done a grand job in this war in Selective Service as well as in the Medical Corps of the Army, Navy and Public Health Service.

"In leaving Selective Service I wish to express to all the civilian physicians and dentists in the Selective Service System my personal appreciation and that of the Medical Division at National Headquarters for the wholehearted service they have rendered throughout the last four and one-half years.

L. G. Rowntree, M. D.
Selective Service System
Washington, D. C."

We know that the many physicians in Louisiana who served on the examining boards for the Army, Navy, and Public Health Service will be gratified to learn that their services gratis to the government have not really been forgotten. While this comes as a late citation, in our opinion it is justly merited. It is too bad that as Colonel Rowntree, appearing before the Pepper Sub-Committee on Education and Labor and discussing hospital expansion, could not have given to this committee such a wonderful recommendation for the medical profession. When he appeared before this committee his presentation could not have been taken as a compliment to the accomplishments of the medical profession in relation to the physical defects that occurred as a result of the rejections by Selective Service. It is very interesting to note that from these hearings and study by the sub-committee many bills have been proposed and introduced in Congress proposing to correct the so-called defects and the faulty distribution of medical service. Many astute political students are of the opinion that the Wagner Bill is a true camouflage; that the proposals in Senate Bill 191 and Senate Bill 1318 are in reality a more forcible regimentation than in Senate Bill 1050. Senate Bill 1050 contains the setup for the expansion of hospitals, maternity and infant care as Senate Bill 191 and Senate Bill 1318. This represents a high form of political ingenuity.

Senate Bill 191, known as the hospitalization bill of which we have spoken very frequently in these columns, is the outgrowth of this study. However, they have also taken a new step which is not at all surprising with the introduction of Senate Bill 1318. This same Senator Pepper introduced for himself and other members of the Committee on Education and Labor the bill whose title reads "To provide for the general welfare by enabling the several States to make more adequate provision for the health and welfare of mothers and children and for services to crippled children, and for other purposes." When Senator Pepper introduced this bill, he described it as "a modest beginning." He said, in part:

"Medical care and health supervision of children is costly in dollars. Reliable authorities estimate it comes to somewhere in the range of $25 to $40 a year for each child in the United States. With 40,000,000 children under 18 that represents a total of at least $1,000,000,000 for the country. A Federal appropriation of $75,000,000 for maternal and child health and for crippled children for a year cannot go very far in meeting these all-over health needs of children. Even if it were divided with mathematical precision among all children, it would come to less than $2 a child. Of course, it will not be so divided, but that kind of calculation helps to indicate the modesty of the approach in this bill.

"If we were at peace, the sums called for now would appear inadequate in the extreme. But we are still at war. We can only inch ahead at this time. Many doctors, nurses, and other trained personnel who could help us expand our services for children are in the armed forces. When they are released from service, they will help us. New personnel—and we will need a large expansion — cannot be trained overnight. Health and welfare services, if they are any good, are manned by workers with years of specialized training and experience behind them. The greatly expanded demand for health and social personnel and the greatly enlarged opportunity for the training of such workers, created by this measure, will make a constructive contribution to national policy of peacetime full employment.

"Obviously, a Nation-wide child-health and child-welfare program is not something that can be created in a year. For that we must have time to develop services, train personnel, develop facilities, conduct research and demonstrations, and educate parents in the use of facilities and in the application of expanding scientific knowledge. The authorizations for appropriations that we are suggesting for this year will give us a fair start toward our objective, though it will be only a beginning."

Here we have in its crude form a manifestation to expand and to extend the emergency maternity and infant care program and to make it a permanent feature in their postwar planning. Of course we all should remember that the contract we had with the Children's Bureau in this state providing for the emergency maternal and infant care program was entered into after a great deal of pressure and with some stringent reservations. One of the most important of these reservations was that the program should be only for the duration of the war. Now they are preparing to make this service a permanent one for the civilian population, using as an argument that the system has proved to be beyond their expectations in success and has materially reduced the maternal infant mortality rate in this country. We are at present trying to get some statistical data from our state in regard to this latter claim. Therefore, it behooves every member of our State Society to write to his representatives and secure a copy of this bill and study closely its implications. If you would refer to the August 11 issue of the American Medical Association Journal, pages 1101-1112, you will find some valuable information on this subject. After you have given the consideration that is required, you should write or contact your representatives and senators and give them your opinion concerning same. Congress is now in session. The opportunity may be presented for a personal contact with these representatives. A personal contact will be much more effective than any other method. However, if this is not possible, write them your opinion concerning same.

Likewise, you should study Senate Bill 1050, known as the Wagner-Murray-Dingell Bill, and contact or write your representatives and senators concerning this bill. Also you should have your friends, relatives, fellow club members, and other organizations do likewise. Look at the daily press today and you will find quarter page advertisements sponsored by some commercial organizations supporting the wonderful features of social security. You should not forget that the present Wagner-Murray-Dingell Bill is an amendment to the social security act. It is evident that an extensive form of advertising is now being carried on with the full knowledge of those who are sponsoring the Wagner-Murray-Dingell Bill. Now is the opportune time for us to try to counteract these nefarious activities. Unquestionably, very shortly hearings will be had on both of these bills. Appropriate medical representation undoubtedly will be present at these hearings. However, the ground work can be forcibly perfected by your timely cooperation and assistance. Do it now!

Our Committee on Postwar Medical Planning, as well as the profession at large, is greatly concerned with the official plan for the discharge of medical officers from the military forces. For information on this important subject, please refer to the August 11 issue of the American Medical Association Journal, pages 1102-1104. While our medical profession is preparing itself to aid and assist these returning medical officers, it is not clearly understood from these official reports just how rapidly they will be discharged from service. In the meantime, we are exerting every effort possible to make this transformation easy and comfortable for them.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR OF MEETINGS

Sept. 12. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
Sept. 13. Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.
Sept. 19. The Orleans Society of X-Ray Technicians, 7:30 p. m.
Sept. 26. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
Sept. 27. Clinico-pathologic Conference, Touro

Infirmary, 12:00 noon.
DePaul Sanitarium Staff, 8 p. m.
Sept. 28. L. S. U. Faculty Club, 8 p. m.
New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.
Oct. 1. Board of Directors, Orleans Parish Medical Society, 8 p. m.
Oct. 2. Eye, Ear, Nose and Throat Staff, 8 p. m.
Oct. 3. Mercy Hospital Staff, 8 p. m.
Oct. 4. Executive Committee, Baptist Hospital, 8 p. m.
Oct. 8. Scientific Meeting, Orleans Parish Medical Society, 8 p. m.
Oct. 10. Woman's Auxiliary, Orleans Club, 3 p. m.
Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
Oct. 11. Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.

There was no meeting during the month of September as the Society was in recess; meetings will resume on October 8. Members of the Touro Infirmary staff will present the program at the October meetings.

NEWS ITEMS

Dr. Joseph Menendez recently addressed the Quota Club.

Lt. James W. Tedder was the recipient of the Bronze Star Medal award with citation for heroic and meritorious service to survivors of a torpedoed, sunken ship in Lingayen Gulf, during the invasion of Luzon in the Philippines last January. The presentation was made during personnel inspection 7 July by Captain H. E. Jenkins, Senior Medical Officer.

MONTHLY STATISTICAL REPORT OF NEW ORLEANS, JULY, 1945

Estimated Population as of July 1, 1944

White		391,000
Colored		169,000
Total		560,000
Total Deaths, All Causes		538
White	330	
Colored	208	
Resident Deaths, All Causes		418
White	250	
Colored	168	

DEATH RATES
(Per 1000 per annum for the month)

	All Deaths	Non-residents excluded
White	10.2	7.6
Colored	14.8	11.9
Total	11.5	8.9

Total Births Recorded		1,244
White	799	
Colored	445	
Resident Births		962
White	609	
Colored	353	

BIRTH RATES
(Per 1000 per annum for the month)

	All Births	Non-residents excluded
White	24.5	18.7
Colored	31.6	25.0
Total	26.6	20.6

Max M. Green, M. D.,
Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

STATE MEETING TO BE HELD IN APRIL 1946

At the meeting of the Executive Committee of the State Medical Society held Saturday, August 25, it was decided to hold the annual state meeting on April 29, 30, and May 1, the place of meeting to be decided upon later. The details of the Executive Committee meeting will be published next month.

64th GENERAL HOSPITAL HONORED

Word has been received by Dr. Urban Maes, Director and Professor of Surgery, Louisiana State University School of Medicine, that the Meritorious Service Unit Plaque was presented to the 64th Military General Hospital This unit is sponsored by the L. S. U. School of Medicine and was organized by Dr. Maes. Its medical officers are members of the faculty and alumni of the school. The Commanding General of the Peninsular Base Section presented the plaque at retreat ceremonies July 25, 1945, at Livorno, Italy. The citation entitles members of the unit to wear the wreath on the right forearm sleeve. The citation reads as follows:

CITATION FOR MERITORIOUS SERVICE UNIT PLAQUE

The 64th General Hospital for superior performance of exceptionally difficult tasks and outstanding devotion to duty in the Peninsular Base Section for the period 1 August 1944 to 1 October 1944. This medical unit was the first hospital in line of evacuation of casualties from fighting in the Arno River sector. This hospital quickly adapted itself to field hospital techniques. From 1 August 1944 to 1 October 1944 the professional service of the hospital functioned on a 24-hour basis. The superior care of medical patients and battle casualties was consistent with the unselfish ideals of the medical service of the United States Army. With rigid discipline, full knowledge of and devotion to its mission, the 64th General Hospital upheld the highest traditions of the United States and of the allied nations.

BASE HOSPITAL NO. 24

The following excerpt from a letter from one of the medical officers connected with Base Hospital No. 24 gives some information as to the status of this organization. "As you know, the 24th has all but disintegrated. We closed the hospital in Florence on May 23 after nine months of busy and interesting work in that location. Shortly thereafter re-deployment began and most of our officers and nurses with points below 80 were transferred to Pacific bound units and others to occupation hospitals. Three-fourths of the men in the medical detachment have been transferred. The medical service lost John Archinard, Buddy Matthews, Bob Snavely, Pierre Poole and Tom Weiss who were all transferred to Pacific bound evacuation and station hospitals, and in fact have already left for the Pacific. The surgical service lost Frank Cox, Sidney Charbonnet, Joe Sabatier, Morty Silvey, Dick Vincent, Homer Parnell and Phil Trout. All the dentists have left except Charles Rossner. Most of our nurses have been transferred. As you see, the 24th is now nothing but a broken down old steleton, war torn and weary, and badly in need of physical and spiritual rehabilitation. Those of us who remain do not know what the future holds in store for us but rumor has it that the 24th will be leaving for the states sometime during the next two months and will be in a strategic reserve pool awaiting new assignments."

MAJOR KAGY FREED

The many friends and classmates of Major Edwin S. Kagy, Tulane Medical School 1934, were delighted to read that the Major was freed from a camp at Yokohama after having been a prisoner of war in Japan since the fall of Corregidor. According to the newspaper reports, Major Kagy had been allowed to practice among the prisoners of war in the camp in which he was located.

Major Kagy's wife, the former Mary Crossen, was assistant secretary-treasurer of the Louisiana State Medical Society before her marriage. Mrs. Kagy is known to many of the doctors of the state. After Major Kagy's capture, she was good enough to resume work with the Louisiana State Medical Society and the Journal.

DR. W. C. SMITH NEW DEAN

The innumerable friends of Dr. Wilbur C. Smith have heard with pleasure that this well known teacher of anatomy at Tulane University School of Medicine has been elevated to the position of Dean of the Louisiana State University Medical School. Dr. Smith has taught anatomy at Tulane for twenty-seven years. While at Tulane Dr. Smith was identified for some twenty-three years with the department of physical education. At the present time he is president of the National Collegiate Athletic Association. Every one will wish him success in his new undertaking.

Dr. Hiram W. Kostmayer, Dean of the Tulane School of Medicine, announces that Dr. William B. Wendel has succeeded Dr. Sydney Bliss as professor and head of the department of biochemistry at Tulane. Dr. Wendel is a graduate of Emory University, he did postgraduate work at the University of Chicago, University of Tennessee, and Washington University. He was associate professor of chemistry at the University of Tennessee before coming to Tulane.

COMMENCEMENT EXERCISES OF TULANE UNIVERSITY MEDICAL SCHOOL

At the annual Graduation Exercises held August 14, 1945, the graduating class was addressed by Dr. Emil Novak, the distinguished Baltimore gynecologist. Following the address, commissions were awarded in the Medical Corps of the Army and in the Naval Reserve to those members of the class who were educated under the Student Training Program. This class was the first to graduate that had completed this program, taking three years continuously instead of the usual four years.

Three Paul Tulane Fellows were selected from the Senior class, these men being Drs. Thomas G. Baffes, John Jacob Baehr and Rodney Clifton Jung. Dr. Walter O. Moss of Lake Charles, vice-president of the Tulane Alumni Association, spoke in behalf of the organization to the members of the graduating class. The invocation and benediction were pronounced by the Reverend Lemuel

Davis Haughton whose son was one of the graduates.

IVY DAY AT TULANE

The graduating class of Tulane celebrated Ivy Day on Monday, August 13, on the uptown campus of the University. The Ivy Day program was presided over by Dr. Rodney C. Jung. The annual address was delivered by Dr. Charles E. Dunlap, Associate Professor of Pathology and Bacteriology.

The Walter Reed Memorial Medal, given by the Louisiana State Medical Society to the graduate presenting the best thesis either on tropical or preventive medicine, was presented by Dr. A. V. Friedrichs, chairman of the Walter Reed Memorial Committee, to Dr. Benjamin T. Galloway. In this presentation Dr. Friedrichs mentioned that Dr. Iwao Uyeda received honorable mention for his excellent thesis. Other awards included the Querens-Rives-Shore Award given to Dr. A. V. N. Mortensen, with honorable mention to Dr. A. Norman Evans and Dr. William D. Franklin. The Sidney K. Simon Prize was awarded to Dr. Leo E. Johns, with honorable mention to Dr. George E. McCaskey. The Professor of Medicine Award was divided between Dr. William T. Newsom and Dr. Thomas C. Donald. The Isadore Dyer Medal for the highest grades obtained in four years of medical school was awarded to Dr. Thomas G. Baffes. The Jacob C. Geiger Medal was given to Dr. Mitchell Ede.

The ivy was planted by Drs. Rodney C Jung, John J. Baehr and Luther T. Tyler.

THE U. S. PHARMACOPOEIA

The U. S. Pharmacopoeia observes its 125th anniversary this year. For one hundred and twenty-five years, the USP has hewn to its purpose "to provide standards for drugs and medicines of therapeutic usefulness or pharmaceutic necessity, sufficiently used in medical practice within the United States or its possessions; to lay down tests for the identity, quality, and purity of these; to insure, so far as practicable, uniformity in physical properties and active constituents."

WAR-TIME GRADUATE MEDICAL MEETINGS

The war-time graduate medical meetings sponsored by the American Medical Association, the American College of Physicians and the American College of Surgeons will probably not discontinue their activities until mobilization has been carried further than it is at the present time. One of these meetings will be held at the DeWitt General Hospital, Auburn, California on September 14. Dr. Alton Ochsner will participate in a peptic ulcer symposium as well as presenting a paper on surgical treatment of empyema. Lt. Col. Ambrose Storck will take part in a symposium on the care of paraplegic patients and will also appear on the program in a symposium on vascular disease.

Colonel Roy H. Turner, M. C., of New Orleans, formerly Communicable Disease Treatment Branch, Medical Consultants Division, has been assigned overseas.

The School of Medicine, University of Pittsburgh, offers an Orientation Course in Clinical Allergy, under the sponsorship of The American Academy of Allergy, for five days, October 1 to 5, 1945, inclusive, at the School on Bayard Street, Pittsburgh, Pennsylvania. Fee $40.00; for veterans, service men, and residents $10.00. Registration for evening round table conferences only by special arrangements.

Inquiries should be addressed to William S. McEllroy, M. D., Dean, School of Medicine, University of Pittsburgh, Pittsburgh 13, Pennsylvania.

THE NEED FOR PHYSICIANS

The following release has been cleared through the facilities of the Office of War Information. It indicates that others besides the medical profession realize that there will be a critical shortage of physicians and dentists, and unless some serious effort is made to supply the deficiency which will exist, the medical schools will not have a sufficient number of students to turn out the much needed doctors. The release in part reads:

With the nation facing a serious shortage of doctors and dentists in the postwar period, Paul V. McNutt, chairman of the War Manpower Commission, today announced plans to enroll immediately 12,000 students for medical, dental, pre-medical and pre-dental school courses beginning this fall from among veterans now being discharged from the armed services.

Mr. McNutt said surveys show that even if medical school enrollments, admissions and graduations had been maintained at levels prevailing before recent changes in Selective Service policies there still would have been a postwar shortage of thousands of doctors and an even severer shortage of dentists.

"Unless we move quickly and successfully to wipe out the gaps torn in the ranks of the medical and dental professions by the exigencies of war, America will be denied essential security in terms of national health," Mr. McNutt said.

The situation is so severe that some medical schools will not fill any substantial part of their first-year classes beginning next month, he added.

With a goal of 8,000 students for medical and pre-medical schools and 4,000 for dental and pre-dental schools, the War Manpower Commission, with the cooperation of the Army, the Navy, the Veterans Administration and the medical and dental professions, will place the story of the opportunities in the medical and dental professions before men in the armed forces who are scheduled for discharge in the near future.

At all separation centers the most likely candidates for medical and dental and pre-medical and pre-dental schools will be screened on the basis of their qualifications and expressed interest.

While nearly 40 per cent of the active practicing physicians of the United States are now in the armed forces, the chief concern at present is not only the wartime supply of physicians and dentists for civilians, but also the supply of physicians and dentists for veterans and the peacetime armed services. As a consequence of the war, Mr. McNutt said, many more physicians will be needed than were available before the war. Present estimates are that a peacetime army will require 10,000 physicians, a peacetime navy about 5,000 and the Veterans' Administration about 15,000.

Furthermore, the widespread destruction of hospitals and medical schools and physician casualties in the liberated countries of Europe and China will require the aid of unknown numbers of physicians from the United States, he said. The number of physicians in the armed forces of the United States killed or incapacitated by the war, and requiring replacement, together with the high mortality among over-worked physicians who remained at home during the war are other known factors whose effects cannot be accurately predicted.

On the basis of the information now available, Mr. McNutt said, it is conservatively estimated that about 35,000 additional doctors will be needed. But a survey by the American Council on Education and the Office of Scientific Personnel of the National Research Council has indicated that less than half of this need will be met.

INFECTIOUS DISEASES IN LOUISIANA

The weekly morbidity report for the week ending July 7 was one of the most remarkable ones that has ever emanated from the State Board of Health. There were only two diseases listed in numbers greater than 10, namely, malaria with 21 cases and measles with 14. As 13 of these cases of malaria were contracted outside of Continental United States, it may be said truthfully that measles was the only reportable disease which carried in numbers over 10. There were two cases of poliomyelitis reported this week, and seven cases of typhus fever. For the week which closed July 14, again the reportable diseases were distinctly small. There were listed 64 cases of pulmonary tuberculosis, 25 of malaria, 17 of unclassified pneumonia, 15 of typhus fever, 13 of septic sore throat, and 10 of diphtheria. The poliomyelitis cases numbered only one. The typhus fever patients, with Lafayette and Iberia Parishes each reporting four cases, came from other parishes in the southern part of the state. For the week ending July 21, pulmonary tuberculosis again led all other reportable diseases with 58 cases. Other diseases occuring in double figures included 16 cases of malaria, 10 contracted outside the United States, 11 cases of typhus fever, and 10 of diphtheria. The four cases of poliomyelitis that were reported this week came two from Caddo and two from Bossier Parish. The typhus fever patients were found four in Iberia Parish, three each in Orleans and Avoyelles, and one in St. James Parish.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported that for the week which closed July 14 there were listed a remarkably small number of deaths in the City of New Orleans, there being only 99 people expiring in this particular week, as contrasted with a three-year average of 132. Of these people dying in the city, 62 were white, 37 were colored, and 10 were in infants under one year of age, divided equally between the two races. There was a very sharp increase the following week, evidently all the very sick people of the previous week hanging on for longer than the few days they should, because there were 44 more deaths this week, 88 among the white population, 55 in the colored, and of these 13 were children under one year of age. For the week which closed July 28, there was quite a sharp decline. Of the 119 people who expired in New Orleans that week 71 were white, 48 colored, and only seven of these were children under one year of age. The deaths in New Orleans for the week of August 4 were almost exactly the same as the previous week, 120 dying this week, divided 70 white and 50 negro. There was a considerable increase in the deaths of children, 18 of the little tots dying in this particular week.

TUBERCULOSIS DEATH RATE IN LOUISIANA

The death rate in Louisiana is among the highest of any state in the United States. It ranks eighth with a death rate of 50.5 per 100,000 population. The death rate for the United States as a whole is 42.6. Arizona, as might be expected because of the large number of people who migrate there who have tuberculosis, leads all states with a rate of 98.2, followed then by Tennessee, New Mexico, Kentucky, Nevada, Maryland and the District of Columbia The rate is lowest in the state of Utah, being 11.2. Kansas, Idaho, Iowa, Nebraska and Wyoming are other states that have a rate under 20. These figures are from the United States Bureau of the Census, June, 1945.

7TH WAR LOAN

The following letter was received from the Treasury Department:

Our gratitude seems small-fry!

It's inadequate for the generosity, for the patriotism, for the effectiveness of publishers' cooperation during the 7th War Loan.

That's why our simple words of appreciation for your vital war effort support don't measure up to the Treasury's pleasant wish—to tell you how grateful we are. But your magnificent war financing contribution has other rewards: it's a helping hand for the care of our wounded, a strong blow to down any threat of inflation, a kind friend to fulfil hopes for education, homes, security.

Elihu E. Harris,
Chief, Periodicals Section.

BOOK REVIEWS

Intravenous Anesthesia: By R. Charles Adams, M. D., C. M., M. S. (Anes.). N. Y. Paul B. Hoeber, Inc., 1944. pp. 663. Price, $12.00.

Intravenous anesthesia has been the dream of surgeons ever since the discovery of surgical anesthesia. Before the development of the barbiturates, no satisfactory drug was available, though many were tried. Dr. Adams has traced the history of intravenous anesthesia step by step and described each drug that has been tried. He has discussed the advantages and drawbacks of each. A good deal of the book is devoted to the pharmacology of the barbiturates. Pentothal, in particular, is described in detail and emphasis is placed upon the technic of its use in clinical surgery. The subject matter, both the historical and practical aspects, is covered in great detail and supported by an excellent bibliography. The book will be of interest primarily to physicians, devoting their time to anesthesiology, to pharmacologists, and to others who work with depressant drugs. The general practitioner of medicine may find it useful as a reference. The author has done an excellent piece of work with a difficult subject.

John Adriani, M. D.

Peripheral Nerve Injuries: By Webb Haymaker, Capt. M. C., A. U. S., and Barnes Woodhall, Maj., M. C., A. U. S. Philadelphia, W. B. Saunders Co. 1945. pp. 227. Price, $4.50.

Presented in the text of this distinguished manual is all of the information that has been established concerning peripheral nerve injuries and new data that have accumulated during the war. It is an appraisal of a wide field of knowledge.

The book is divided into three sections: the first deals with the principles of innervation; the second is concerned with special methods of examination of the patient; the third has to do with the clinical features of plexus and peripheral nerve injuries. At the beginning of each section there are brief remarks intended to indicate the highlights of its contents. There are numerous, excellent photographs, charts, diagrams and illustrations.

While much of the contents of this publication is highly specialized and technical and will be used mostly by neurologists and neurosurgeons it will be of unusual usefulness in the field of general surgery. Its illustrious authors have herein made more than an ordinarily important contribution to medical literature. Their work manifests fine discrimination and judgment in its preparation. It is a vital, timely necessary book.

C. P. May, M. D.

The Examination of Reflexes: By Robert Wartenberg, M. D. Chicago, Year Book Pub. Inc. 1945. pp. 222. Price, $2.50.

Material for this book was obtained from an exceedingly thorough, critical survey of the literature, old and new, and included is a bibliography of four hundred and sixty-five reference citations. From all of this one gets a glimpse of the fascinating history of reflexes.

Neuropathologic conditions document themselves readily in reflex changes. The status of the reflexes provides truly objective findings which are the aim of every medical examination.

Heretofore the student of reflexes has been confronted with varied, confusing and conflicting classifications; a chaotic, arbitrary nomenclature; a mystic maze of terms; a staggering number of reflexes.

On the basis of a few simple fundamental physiologic tenets an attempt has been made here to classify and unify the numerous reflexes with the idea of simplifying, clarifying and facilitating the every-day neurologic examination.

Dr. Wartenberg says: ". . . the goal of methods of reinforcement is to make a slight reflex more apparent and one seemingly lost perceptible. It is a common mistake to regard a reflex as lost when it is not . . . The deep reflex is a delicate and sensitive mechanism and is highly susceptible to the slightest external influence . . . the tabetic patient who shows no reflexes when sober may manifest them while under the influence of alcohol, and that the knee jerk, for instance, increases the moment the patient falls asleep and decreases when he is in deep sleep."

The author has achieved completeness, relative brevity, and simplicity of presentation in this excellent, significant and profound scientific work.

C. P. May, M. D.

The Marihuana Problem in the City of New York; Sociological, Medical, Psychological and Pharmacological Studies: By the Mayor's Committee on Marihuana. N. Y. The Jacques Cattell Press, 1944. pp. 220. Price $2.50.

This book is the report of a committee appointed by the mayor of New York upon recommendation of the New York Academy of Medicine to investigate the sociologic and scientific aspects of the use of marihuana. The investigation was undertaken as a result of the extensive widespread publicity on the use of the drug and of its harmful effects. The findings of special investigators of the police department formed the basis for the sociologic report. In New York the distribution and usage occurs principally in Harlem. It was concluded that marihuana was not a determining factor in the commission of major crimes and probably of little etiologic importance in crime in general. Although it was used by school children the incidence of this was much lower than one would be led to believe by popular reports and the smoking of marihuana was not a problem in juvenile delinquency.

The clinical studies were carried out on 77 prisoners in the municipal hospital on Welfare Island. Over half of the subjects had been marihuana smokers. The administration of the crude drug and purified principles in various forms and dosages was carried out under carefully controlled conditions. The mental and physical reactions of the subjects are described. Psychotic episodes occurred in only nine cases and in six instances they were evanescent in nature. In the three cases of prolonged psychosis, in view of the previous and later history, the drug action was considered to be not more than a contributing factor. The acute changes in organic and systemic functions were relatively slight. An increase in pulse rate, blood pressure, blood sugar and metabolic rate were commonly observed and were interpreted as secondary reactions to central nervous system excitation.

Psychologic studies were conducted with respect to effects on psychomotor responses, intellectual functioning, emotional reactions and personality structure. Positive effects were impairment of static equilibrium, hand steadiness and complex hand and foot reactions. Contrary to most descriptions of action, the estimation of time intervals and linear distances were unchanged. Intellectual functioning in general was impaired but the basic personality structure of the individual did not change.

No evidence was found that marihuana produces addiction since it can be stopped without mental or physical distress comparable to that encountered in the morphine addict and little, if any, tolerance is acquired. The effect of the drug on withdrawal symptoms in the morphine addict was investigated in 28 subjects with 28 controls. The impression was gained that the treated subjects were benefitted but the results cannot be considered conclusive. In a comparison between users and non-users of marihuana who served as subjects no evidence was found that the former were inferior in intelligence or had suffered any mental or physical deterioration.

In a chapter on pharmacology by Dr. S. Loewe, previous findings are reviewed and original investigations of the author are described with particular reference to relationship between chemical structure of active principles and biologic activity and to methods of bioassay. Tetrahydrocannabinol is probably the most important active constituent but there is evidence of others which produce certain types of activity.

Considerable time and effort has obviously been expended in this study and pains have been taken to conduct the clinical and psychologic experiments in a scientific manner. Since, however, the subjects were under such controlled conditions the impression gained, of the relative harmlessness of marihuana, may not be justified.

Ralph G. Smith, M. D.

The Chemistry and Pharmacy of Vegetable Drugs: By Noel L. Allport. Brooklyn. Chemical Publishing Co., Inc., 1944. pp. 252. Price, $4.75.

This is a synopsis of miscellaneous, superficial information more or less chemical and pharmaceutical on selected vegetable drugs, mostly those included in the B. P. Historical notes and therapeutic comments are included.

The chemistry in the case of most of the drugs consists in naming some of the active constituents and stating the chemical or pharmaceutical group to which they belong; e. g., it is stated "Twenty-five alkaloids have been isolated from opium"; of these six are named and the empirical formulae are given for only two. In only a few instances are the structural formulae of the active constituent given. Some of these few are incorrectly written; e. g., the formula given for ephedrine lacks two double bonds in the ring. Chemical tests for identity and assay procedures are given in detail.

The pharmacy consists of description of collection and of manufacturing procedures. A list of the principle preparations of each drug is given with statement of other ingredients and comment as to therapeutic use. A gross description of each crude drug as it appears on the market is included. In most cases the microscopic characters of the crude drug are not mentioned.

The authorities for the botanical means of the plant sources are, without exception, omitted. The plant family is not often given.

The therapeutic comments are perhaps the weakest part of the book. They are in many cases very misleading as: "The physiological action of opium is essentially hypnotic"; "Codeine does not induce drug habit"; "The sulfates of both atropine and hyoscyamine are used for making solutions for hypodermic injection, the former for the relief of pain in sciatica and as an antispasmodic in asthma, the latter for severe nervous excitement"; and "Strychnine itself is so extensively used in medicine both as a tonic and as a vasoconstrictor in cases of cardiac failure . . ."

It is not recommended for those who are not familiar enough with the subject not to be misled and would not add much to the knowledge of those who are that familiar with the subject.

FOSTER N. MARTIN, JR., M. D.

Ventures in Science of a Country Surgeon: By Arthur E. Hertzler, Halstead, Kansas. pp. 304.

Dr. Hertzler is a most interesting, one might almost say fascinating writer. His various monographs have appealed to a large number of medical men both because of their scientific content and their literary style. His "Horse and Buggy Doctor" was a best seller several years ago and had an enormous circulation, hence as an author he is appreciated by the laity as well as by doctor of medicine. His latest work should prove of tremendous interest to physicians in general and more particularly it could be read with enormous profit by the younger medical man. Hertzler has an inquiring mind and has delved into many new things and modified many old procedures, sometimes with success, sometimes without. Even if he failed to succeed in a study or a project he learned something from it and in this book he tells of his successes and of his failures in his ventures in science or more properly into experimental surgery, medicine, and physiology.

One minor criticism of Dr. Hertzler is that he trades in on living in a small town and calls himself a country surgeon. He may be a country surgeon in that he practices in the country but he has traveled extensively, he has studied in Europe, he has taught in one of the larger medical schools in this country and the physical setup of his hospital, his workshop, is as elaborate and complete as any hospital in the United States. In his early years he may have had to do a considerable amount of improvisation, but certainly for the last good many years his institution, although in a smaller town, has every facility and attribute that one would expect in the largest hospitals in the bigger cities in the country.

J. H. MUSSER, M. D.

PUBLICATIONS RECEIVED

C. V. Mosby Company, St. Louis: The Care of the Neurosurgical Patient, by Ernest Sachs, A. B., M. D.

Biodynamica, Normandy, Missouri: Injury and Death of Bacteria by Chemical Agents, by Otto Rahn.

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TREATMENT OF LEPROSY WITH DIASONE

A PRELIMINARY REPORT

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Recently a number of new derivatives of diamino diphenyl sulfone have been tried in the chemotherapy of experimental animal tuberculosis and more recently of human tuberculosis. One of those agents is diasone, the disodium formaldehyde sulfoxylate derivative of diamino diphenyl sulfone. Callomon[1] has reported that diasone inhibited the progress of experimental tuberculosis in the guinea pig and that it was less toxic than promin. Feldman and associates[2] have corroborated the therapeutic effect of diasone in experimental tuberculosis and found it less toxic than the parent drug diamino diphenyl sulfone. Diasone has been used in human tuberculosis with promising results by Petter and Prenzlau,[3] but their report has not been generally confirmed and the status of diasone therapy of tuberculosis is still under clinical investigation.

In the chemotherapy of leprosy, promin is still being used intravenously at the National Leprosarium with encouraging results. Promin, however, has been found to be too toxic when administered orally to patients with leprosy[4] and, since oral medication is advantageous in such a chronic disease as leprosy, the low toxicity of diasone when given by mouth had a special appeal to the writers.*

Petter and Prenzlau[5] advocated 1 gram of diasone a day as an adequate dose in treating human tuberculosis. They found blood levels ranged between 1.5 mg. and 2 mg. per 100 c. c. with this dose. Upon increasing the dose they found that the blood concentration levels did not increase proportionately, and expressed the opinion that a dose greater than 2 grams a day was not indicated in the treatment of clinical tuberculosis.

TECHNIC OF MEDICATION

In the writers' preliminary study a small group of leprosy patients were started on 1 gram of diasone daily (one 5 grain capsule three times a day). Careful clinical and laboratory examinations were conducted. Urinalyses and hemograms on every patient were done twice a week at first and later at intervals of at least two weeks, and other laboratory tests were carried out when indicated. Within a few days of the inception of treatment, several patients experienced hematuria, so that treatment was necessarily discontinued. Indeed the frequency of hematuria was the chief indication for changing the technic of administration of diasone. It was found that by starting with smaller doses of diasone, 1/3 gram daily, the development of hematuria could be avoided. After the patient had acquired a tolerance for the drug, that is, after one or two weeks, it was found to be safe to increase the dose to 2/3 gram daily. Several weeks later, if no toxic symptoms had developed, the full dose of 1 gram could be administered.

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*The diasone used in this investigation was supplied by Abbott Laboratories of North Chicago through the courtesy of Dr. George R. Hazel.

At present, the maximum dose is 1 gram daily, and this dose is administered only to patients exhibiting no evidence of intolerance after one month or more of clinical and laboratory observation.

TOXIC MANIFESTATION AND REASONS FOR DISCONTINUING TREATMENT

Although diasone was administered to 70 patients altogether, treatment had to be discontinued in 23 of them. Table 1 lists the causes for discontinuance of treatment.

TABLE 1

CAUSES FOR DISCONTINUANCE OF DIASONE TREATMENT

	No. of Cases
Hematuria	6
Gastritis	6
Anemia	4
Dermatitis	3
Iridocyclitis	1
Hypertension	1
Deserting absconding patients	2

Renal Damage: Renal irritation resulting in gross or microscopic hematuria was the cause for interrupting therapy in six patients. This condition developed exclusively during the early stage of the investigation, when the drug was given in initial doses of 1 gram. Since the adoption of new technic of starting all patients on 1/3 gram of diasone daily and increasing to 2/3 gram only after one or two weeks of treatment, no further evidence of renal disfunction has occurred.

Gastritis: Nausea of a mild nature was reported at first by approximately one-fourth of the patients taking diasone. With continuance of treatment, as the patients acquired a tolerance for the drug, nausea decreased or disappeared. Only a few patients complained of severe nausea with anorexia and loss of weight. Vomiting seldom occurred. It was found that, by giving diasone during meals or in conjunction with alkalies, nausea often could be prevented. Some patients experienced instead of nausea an improvement in appetite, gain in weight, and increase in energy. Gastric irritation with nausea and vomiting was the complaint of six patients, in whom treatment was discontinued at their own request.

Hemolytic Anemia: Diasone being an hemolytic agent, anemia developed in the majority of patients early in the course of treatment. The anemia was generally mild and with the development of tolerance was often replaced by an actual increase in erythrocytes and hemoglobin. Even a moderate degree of anemia was usually controllable by the oral administration of iron, liver extract and vitamin B or by Ventrex as adjuvant therapy. The writers have considered a fall in the red blood cells below the level of 3,000,000 as an indication for temporarily discontinuing diasone. Persistent anemia necessitated permanent discontinuance of treatment in four patients.

Table 2 shows the changes which occurred in the erythrocyte counts of the 47 patients who were able to continue treatment for more than three months.

TABLE 2

CHANGES IN ERYTHROCYTE COUNTS DURING TREATMENT

No. of Cases	No change (differences of less than 50,000)	Decreased Counts	Increased Counts
	10.7%	53.2%	36.1%
47	5	25	17

The average decrease in red blood cell counts in individual cases varied from 50,000 to 1,480,000, and the mean of the averages for the 25 patients was 350,000.

The average increase in the red blood cell counts in individual cases varied from 50,000 to 900,000 and the mean of the averages for the 17 patients was 270,000.

Dermatitis: Toxic dermatitis, manifesting itself twice as erythema nodosum and once as erythema multiforme was the reason for discontinuance of treatment in three patients.

One case of iridocyclitis, one case of hypertension, which were merely coincidental, and two patients who deserted account for the other interrupted treatments.

It is interesting to note that all 23 patients in whom treatment was stopped had taken diasone less than three months, too short a period for evaluation of therapeutic results. It is gratifying that, when they are severe enough to demand cessation of treatment, symptoms of intolerance develop early in the course of treatment.

CLINICAL MATERIAL

The above 23 patients eliminated, there were 47 who took treatment for more than three months. These 47 cases form the clinical material upon which this report is based.

TYPE OF DISEASE TREATED

Of the 47 patients under study, 42 were of lepromatous, or mixed, type, four were of the maculo-anesthetic, or neural type, and one was of the tuberculoid type. It is thus evident that patients with the least favorable prognosis formed the bulk of the clinical material under investigation.

Furthermore, of the 42 lepromatous and mixed cases, 25 were far advanced, 14 moderately advanced, and three minimal in extent of the disease.

Approximately four months of treatment with diasone usually was necessary before clinical evidence of improvement was observed. Thereafter, improvement was usually progressive and increased directly with the length of the period of treatment. This is demonstrated in table 3.

TABLE 3
RELATION OF DURATION OF DIASONE THERAPY TO THERAPEUTIC EFFECT

Duration of Therapy	No. of Cases	Improved	Percentage Improved
3 to 6 mo.	16	11	68.7
6 to 12 mo.	26	19	73
12 to 18 mo.	5	5	100
Total	47	35	74.5

Table 4 shows that the percentage of improvement also increased with the size of the daily dose of diasone up to a certain point.

TABLE 4
RELATION OF AVERAGE DAILY DOSE OF DIASONE TO THERAPEUTIC EFFECT

Gram/Day	No. of Cases	Improved	Percentage Improved
0.1 — .19	3	1	33
.2 — .29	6	4	67
.3 — .39	1	1	100
.4 — .49	6	6	100
.5 — .59	12	10	83
.6 — .69	6	5	83
.7 — .79	2	2	100
.8 — .89	9	5	56
.9 —1.00	2	1	50
Total	47	35	74.5

From the above tables it is apparent that the percentage of improvement was in direct proportion to the duration of treatment and to the average daily dose of diasone up to 0.8 gram. In estimating the average daily dose, periodic rest intervals of several days, during which no drug was administered, were taken into consideration. Although the optimal dose of diasone for leprosy has not been established, it is felt that 1 gram a day is the maximum dose which should be administered over an extended period of time. A dose of 2/3 gram daily was tolerated by a larger number of patients than the 1 gram dose and was adequate in most cases as can be judged by the improvement shown in table 4. It is doubtful that doses larger than 1 gram daily would be therapeutically more potent than the smaller doses.

Of the 47 patients in this investigation only three have shown any advance of the disease in spite of treatment with diasone. In two of these patients, who had apparently shown some improvement after six months of treatment, a few small nodules appeared at the site of old ones which had temporarily receded. This development can be considered a progression of the disease during treatment, and these two patients can be classified as having become worse. However, upon continuation of diasone, the new nodules showed evidence of subsiding. Another patient with far-advanced lepromatous leprosy died of progressive leprous laryngitis. She had taken very inadequate treatment because of repeated and prolonged periods of interruption due to a secondary anemia. Two blood transfusions were necessary when the red blood cells reached the low level of 2,500,000. Altogether this patient was able to tolerate only 47 grams of diasone scattered over nine months of treatment—an average of only 0.21 gram daily. The above three cases, 6.5 per cent of those under study, are the only ones in which the disease advanced.

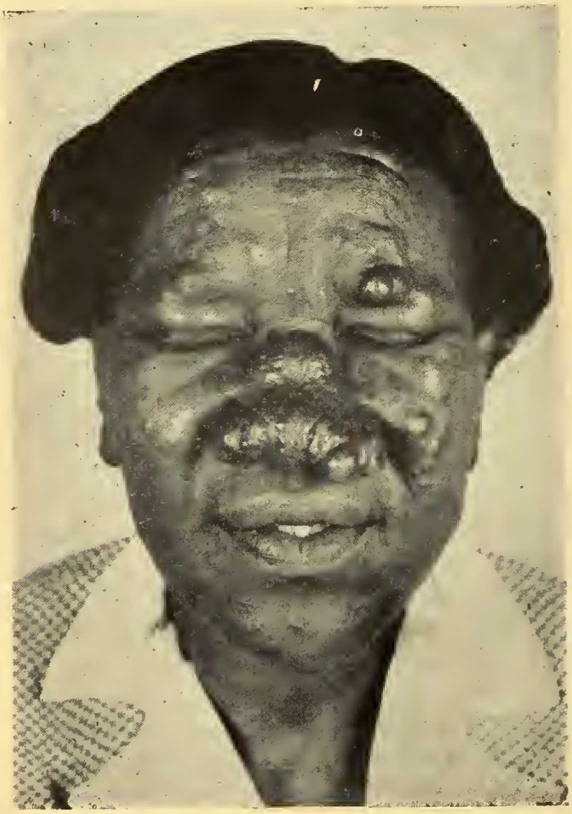
Previous experience in the National Leprosarium indicates that with the type and stage of leprosy under investigation the frequency and the degree of improvement shown are much greater than might be expected in the absence of treatment with diasone.

Tuberculosis is a frequent and serious complication of leprosy at the National Leprosarium[6]. The development of tuberculosis may be regarded as an additional indication for the institution of promin or diasone therapy. Thus far ten tuberculous patients have been placed on promin or diasone treatment in the hope that both diseases might be favorably influenced by the same drug. In two of them the tuberculous disease advanced during the course of treatment but in the majority of the others an improvement was shown by serial roentgenograms.

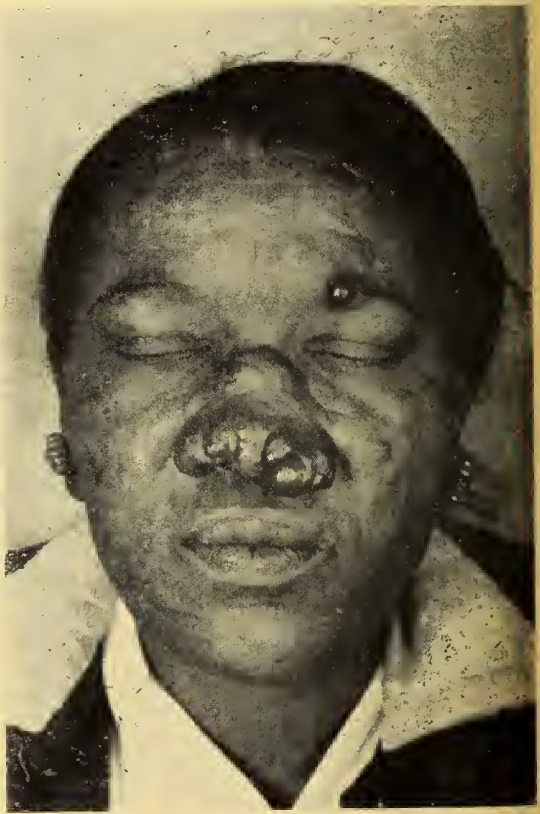
Two brief case histories, representative of a large group, will serve to demonstrate further the effects of diasone in leprosy.

CASE REPORTS

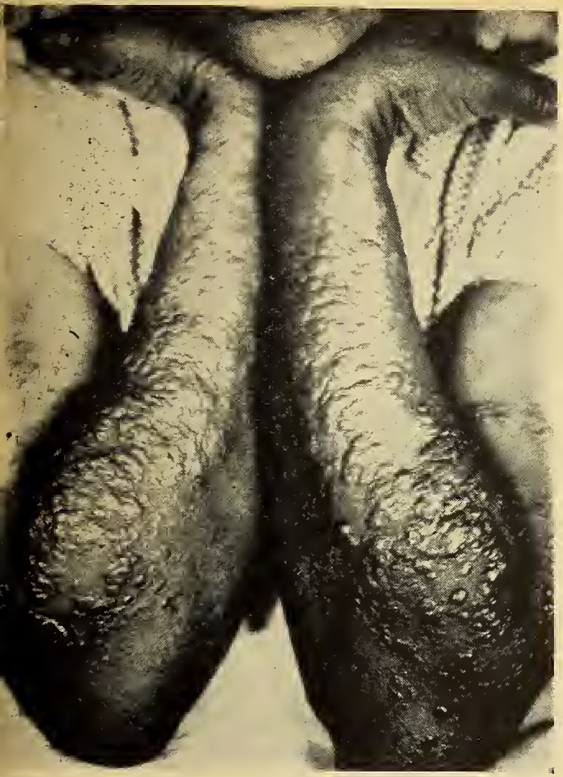
Case 1. Colored female, 30 years of age, had far advanced lepromatous leprosy at onset of diasone treatment. The disease was of five years' duration. Clinical findings were large confluent nodules and infiltration of the face with generalized nodular eruption on arms, forearms, buttocks, thighs and legs, smaller discrete nodules over the chest and evidence of leprous rhinitis. Nasal and skin smears were positive for *M. leprae*. There was some advance in the disease following chaulmoogra oil treatment. Diasone was administered in doses of 2/3 gram daily, totalling 138 grams. In seven months objective improvement was observed (see illustrations), although skin and nasal smears remained positive.



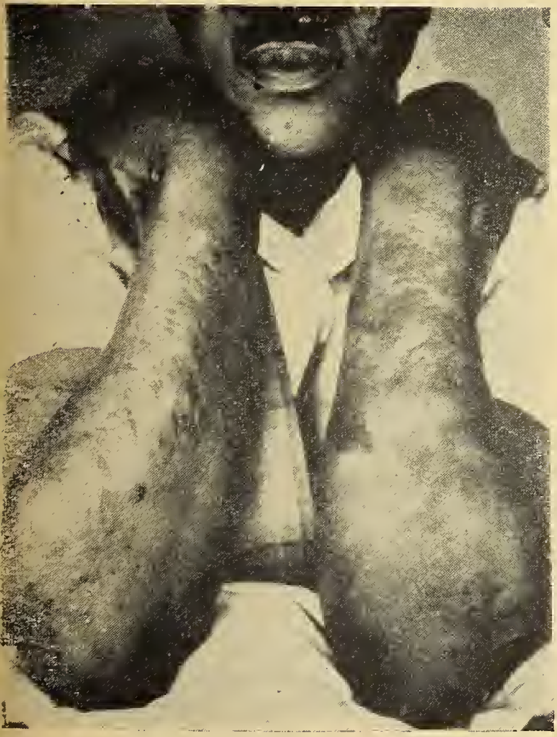
Case No. 1.
Before treatment.



Case No. 1.
After seven months treatment, totalling 138 grams of diasone.



Case No. 1.
Before treatment.

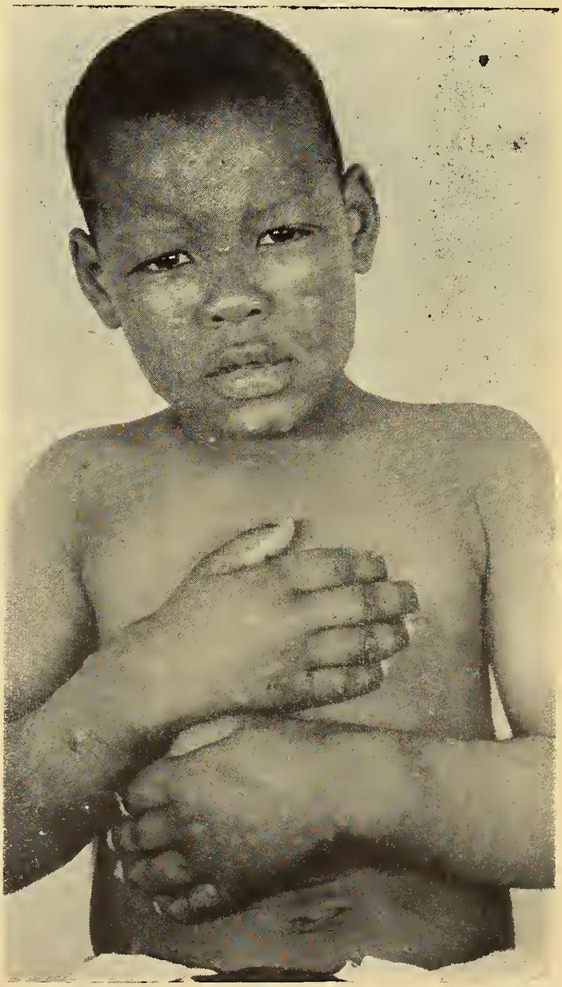


Case No. 1.
After seven months' treatment, totalling 138 grams of diasone.

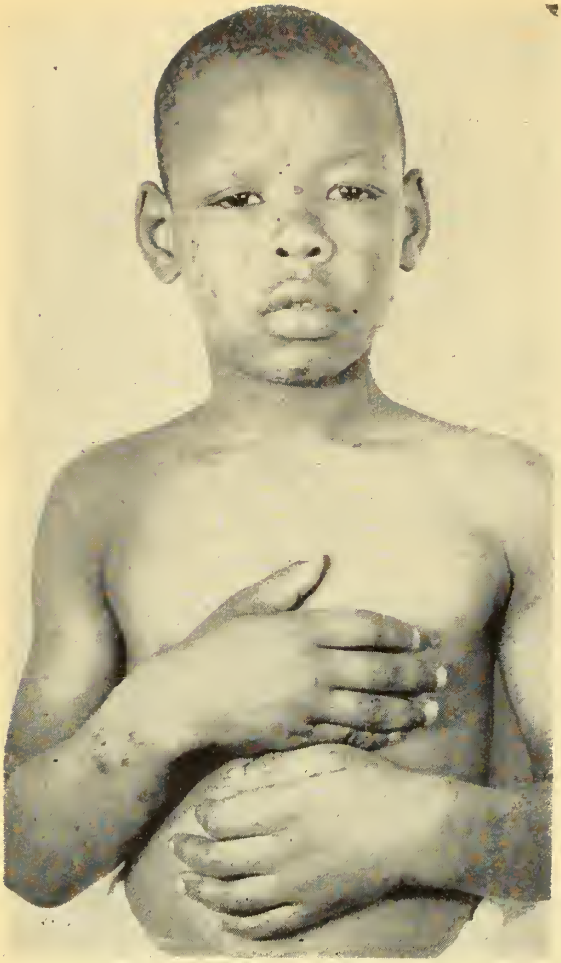
Case 2. Colored male child, 6 years of age, with moderately advanced lepromatous leprosy of two years' duration. Clinical manifestations were multiple nodules scattered over the face, plaques on the right side of the forehead and the left cheek, infiltration and scattered nodules of the forearms, hands, buttocks, thighs, legs and feet and evidence of leprous rhinitis. No improvement was noted with oral administration of chaulmoogra oil. Skin and nasal smears were always positive for *M. leprae.* Diasone was given in 1/3 gram doses daily and totaled 61 grams. Definite improvement after eight months is shown in the illustrations. Skin smears still positive.

CONCLUSIONS

Diasone is a sulfone drug which can be given orally in the treatment of leprosy



Case No. 2.
Before treatment.



Case No. 2.
After eight months' treatment, totalling 61 grams of diasone.

with relatively mild toxic reactions in most cases.

The average tolerated dose is 2/3 to 1 gram daily given in 5 grain capsules during meals.

Oral medication is preferable in leprosy; hence diasone has an advantage over promin which was found to be too toxic for oral administration in leprosy and is used intravenously at the National Leprosarium.

The objective improvement observed during the diasone treatment of leprosy is encouraging, but further clinical evaluation is necessary before it may be regarded as a leprostatic agent.

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ENDEMIC (MURINE) TYPHUS FEVER IN LOUISIANA

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The purpose of this communication is to bring to the attention of the physicians of Louisiana the fact that endemic (murine) typhus fever has increased in incidence remarkably during the past several years. We have recently reviewed[1] 180 cases of endemic (murine) typhus fever observed at the Charity Hospital of Louisiana at New Orleans during the period from January 1, 1929, to December 31, 1944. We were surprised to find that approximately one-half of these cases had occurred during the past three years. This is in keeping with the statistical incidence[2] collected by the United States Public Health Service. Thus, for the ten year period from 1935 to 1944, 28,979 cases of endemic (murine) typhus fever were reported in the United States. In 1935, the annual incidence was reported to be 1,287 but beginning in 1942 a sharp increase occurred which reached a maximum of 5,337 cases during 1944. It is of further interest to note that the disease is essentially a problem of the Southern states, 75 per cent of the collected cases being reported from three states alone—Georgia, Texas and Alabama. However, the disease occurs in practically all parts of the world.

It is difficult to reconcile the marked increase of typhus fever with more general awareness and improved methods of diagnosis. Typhus has been prevalent in the South for many years. One of the earliest reports was that by Paullin[3] of Atlanta in 1913. Additional papers [4-7] followed shortly thereafter attesting to the frequency and need for recognition of the disease by Southern physicians. The evidence seems indisputable that the increase in typhus is real. Typhus, therefore, enters into the diagnostic possibilities of diseases giving rise to fever of undetermined origin and for that reason we may profitably consider the clinical aspects as based on a composite picture of our 180 cases.

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CLINICAL MANIFESTATIONS

Etiology and Transmission: The etiologic agent responsible for endemic (murine) typhus fever is a rickettsial organism morphologically identical to that producing the classic, epidemic, louse-borne, European type. As pointed out by Mooser[8] in 1928 the organism producing endemic typhus, *Rickettsia prowazeki mooseri*, differs from that producing epidemic typhus, *Rickettsia prowazeki prowazeki*, in that the former produces a pronounced scrotal reaction in guinea pigs.

Epidemiologic differences also exist. The virus of endemic typhus has a reservoir in rats and possibly in other rodents. It is transmitted from rat to rat by rat fleas (*Xenopsylla cheopis*) and rate lice (*Polyplox spinulosus*). Experimental evidence to date has failed to demonstrate rickettsial organisms in the salivary glands of the rat fleas nor has successful transmission of the disease by the bite of the flea occurred. Evidently the organisms are transmitted to man by the rubbing of infected feces through abrasions in the skin and the like and it is not unlikely that transmission of the disease can occur through inhalation or ingestion. An infected rat flea may harbor the Rickettsiae for a month or more following recovery from the infection.

These facts clearly delineate the essential features of transmission of the disease to man. Typhus is obviously found most frequently in those persons who work or dwell in environments infested by rats, such as food handling establishments. In our group, 40 patients, or 44.44 per cent, were food handlers, including housewives, but other occupations were represented such as farmers, shipyard workers, common laborers, mechanics, carpenters, and plasterers, so that inquiry concerning occupation of the individual does not always aid in diagnosis. It is apparent also that endemic typhus is not confined to the poorer classes of people nor are any significant differences apparent in race, age or sex. As one would expect, the highest incidence occurs in the summer and early fall. Thus, 128 of our cases occurred in the period from June to October inclusive, although the remainder were scattered throughout the other months of the year. The preponderance of cases (69.44 per cent) were from metropolitan New Orleans though rural communities were not exempt. Almost 10 per cent of our patients lived on farms.

Clinical Picture: We do not propose here to enter into an encyclopedic presentation of the clinical features of typhus fever. Several recent articles by Musser,[9] Joseph,[10] Dyer,[11] Nadler,[12] Stuart and Pullen,[1] and others have amply described the disease. The fact that 75 per cent of our patients entered Charity Hospital with diagnoses other than typhus fever indicates only too clearly that the clinical picture in the beginning at least cannot be distinguished with accuracy from other febrile illnesses. It is of some interest to note the various admitting diagnoses. The most common were: typhoid fever, pneumonia, malaria, influenza, pyelonephritis, virus pneumonia, measles, and drug rash. Less common diagnoses were: secondary syphilis, undulant fever, arsenical hepatitis, subacute bacterial endocarditis, cholecystitis, central nervous system syphilis, intestinal obstruction, pelvic inflammatory disease, meningococcemia, upper and lower respiratory tract infections, encephalitis, cerebral concussion, infectious diarrhea, poliomyelitis, plumbism and tuberculosis.

Exclusion of these clinical entities and establishment of the diagnosis of typhus fever often led to extensive laboratory investigations such as blood cultures, blood smears, urine cultures, spinal fluid surveys, blood urea nitrogen determinations, blood glucose determinations, icterus index, and serum proteins in addition to the standard procedures of hemograms and urinalyses. To obviate such expenditure of time and effort, it is desirable that typhus be borne in mind early in the diagnostic survey of patients with acute febrile illnesses.

In general, the clinical picture of our patients was as follows: The incubation period varied from four to fifteen days. In 84 patients, prodromata consisting of malaise, headache, cough, nausea, chest pain and coryza were present for one to ten days, averaging 2.7 days. In 96 patients (53.33 per cent), the onset was sudden with chilliness, severe headache, marked weakness or prostration, nausea and vomiting, generalized bodily aches and pains in the chest, back, limbs and abdomen, and fever which rose rapidly or by successive steps to reach its maximum of 104°-105° F. by the end of the first week. During the first week there was little distinctive symptomatology. Recurrent chills and chilliness were prominent in many patients. The neuromuscular manifestations included headaches, which were persistent, variable in location, severe and not easily relieved, as the most frequent complaint but likewise included varying degrees of mental disturbances ranging from confusion and delirium to coma, stupor and lethargy. Respiratory manifestations of a non-productive cough, coryza, sore throat and chest pain were present in variable degrees in over half of the patients and progressed to bronchopneumonia in a few cases. Symptoms referable to the gastrointestinal tract were numerous and quite troublesome but did not present any untoward difficulties: nausea and vomiting, 36.11 per cent; diarrhea, 10.55 per cent; constipation, 26.67 per cent; abdominal pain, 21.67 per cent; and abdominal distention, 9.44 per cent.

The most significant feature of the physical examination was the rash characteristic of typhus fever. This was present in 65 per cent of our patients. The rash usually consisted of few pinkish macules from one to five mm. in diameter which disappeared on pressure. Characteristically the rash appears on the fifth day of the disease but some of our patients developed a rash by the second day and as late as the eighth day. The rash developed first on the abdomen then spread peripherally to involve the chest, back, shoulders, arms and thighs in that order. It rarely itched. As the exanthem aged, it became papular and then did not blanch readily on pressure. The duration of the rash varied from two to nine days, averaging six days and usually had disappeared entirely by the time of defervescence of the illness. Obviously, the rash is more difficult to discover in negroes but this will depend on the variations in color of the patients. A rash was observed in 20 per cent of our negro patients.

Other pertinent findings in the physical examination included conjunctival injection in half of the patients, pulmonic rales in the bases of both lungs, palpable enlargement of the spleen in 32 per cent and of the liver in about 7 per cent.

DIAGNOSIS

We may summarize the diagnosis of typhus fever by stating briefly that it should be thought of in the consideration of any acute infectious disease characterized by a sudden onset and a sustained febrile course which terminates in about two weeks by crisis or rapid lysis. In the presence of an epidemic, little trouble may arise but the isolated sporadic case offers more difficulty. In addition to the clinical picture, several presumptive aids in the history and physical examination are: (1) history of contact or dwelling in a rat-infested environment; (2) the characteristic macular rash which appears about the fifth day; and (3) negative clinical or laboratory evidence for other infectious diseases.

Confirmation of the diagnosis of typhus fever depends upon laboratory data. The routine, ordinary laboratory procedures are of little value except for the negative data they supply. A mild leukopenia was observed in our cases during the first week of the disease. An increase in blood cells occurred thereafter so that a mild leukocytosis was evident during the second week. The differential count fell within normal limits. Transient albuminuria due to an increased capillary porosity resulting from the febrile reaction was seen in a few cases.

The most useful laboratory test is the Weil-Felix reaction or the agglutination of certain strains of the *Bacillus proteus vulgaris* called OX_{19} and OX_2. This becomes positive in titers of 1:80 or above at the end of the first week (by the fifth day in three of our patients). This test, however, does not differentiate between typhus fever and Rocky Mountain spotted fever or other rickettsial infections. To effect such distinction, it is imperative that other procedures be followed: (1) complement fixation phenomenon for both typhus and Rocky Mountain spotted fever; (2) biopsies of the macules of the skin; and (3) cross immunity tests by inoculating male guinea pigs and white male rats. These procedures as well as the differentiation of typhus fever and Rocky Mountain spotted fever have been considered in detail in an earlier paper[13].

COURSE AND PROGNOSIS

The mortality of endemic murine typhus is very low, probably less than one per cent. The most frequent cause of death is bronchopneumonia. Typhus is serious, however, in the aged. There were no deaths in our series of cases. We do not have sufficient data to evaluate the incidence of sequelae or other complications but many writers doubt if any can be attributed to typhus.

TREATMENT

There is no effective therapy of typhus fever. As has been stated above, the disease is self-limited and has few or no sequelae. The physician is obligated, however, to maintain nutrition, especially vitamin B complex, adequate protein intake, and abundant fluids, provide sufficient comfort and rest, and treat symptomatically. In that connection, good nursing care is of paramount importance.

Specific Drugs: There are no specific drugs of proved value in typhus fever. Considerable evidence indicates that the sulfonamides may be deleterious in rickettsial infections, hence if used they should be limited to secondary infections and complications of typhus. Pinkerton and his coworkers[14, 16] have shown penicillin to be of value in experimental typhus in laboratory animals but adequate clinical trial has not been given to date to warrant any conclusions. As with the sulfonamides, penicillin may be indicated in the secondary complications of typhus fever. Serum preparations have not fulfilled their expectations. We would call attention to a recent report by Yeomans and his group[16] concerning the efficacy of para-aminobenzoic acid in louse-borne typhus fever. We have had no experience with this drug in endemic typhus fever.

Prevention: This concerns chiefly the eradication and control of rats by poisoning and trapping, disposal of garbage and maintenance of sanitary conditions generally, and rat-proofing of buildings. The latter is probably the most effective, long-range program. A slovenly environment predisposes to rats and thus to the hazard of typhus fever. Immunization to typhus fever by a vaccine prepared from living cells as a medium is of value in the individual patient who must work in a rat-infested habitation but is not practical as a community measure since typhus is sporadic and bears a low mortality.

SUMMARY

The purpose of this paper is to emphasize the remarkable increase of endemic (murine) typhus fever during the past three years in Louisiana as well as elsewhere in the South. Physicians are urged to consider typhus in the differential diagnosis of all acute infectious diseases and to pursue laboratory investigations that will lead to a correct impression.

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RUPTURED RIGHT ETHMOIDS WITH ORBITAL CELLULITIS*

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This case is being presented not because of its unusual rarity or severity, but merely because therapeutically it possibly shows some advances over methods formerly employed.

CASE REPORT

This young man, aged nine, was operated at Mercy Hospital on August 14, 1944, for tonsillectomy and adenoidectomy. He remained in the hospital approximately 24 hours, at which time he was discharged to his home where his convalesence continued. His convalescent period was very normal, getting around after the third day and showing no untoward symptoms. He was discharged as cured on August 26.

On August 28, two days later, I was called and informed that the boy had a slight trickle of blood from his right nostril with apparently some swelling of the inner aspect of the right eye. At that time too,' there was some low grade fever. The parents were advised to present the boy at the office as soon as convenient, more so for the trickling of blood from the nose, adjudged to be adenoidal, than for the eye swelling.

On examination it was noted that there was considerable swelling over the right ethmoid region, inner canthus of right eye and both lids. There was marked lateral displacement of the right eye with some proptosis. Intranasal examination revealed an acutely congested nose with a small accumulation of blood in the region of the middle meatus, but no active bleeding. There was no blood in the nasopharynx or pharynx as might be expected with adenoidal bleeding and it was concluded that the bleeding was entirely nasal even though minimal.

An eye consultation was had and the opinion rendered was that there was retrobulbar cellulitis, possibly metastatic, or extension from sinuses. X-rays were taken at once and reported marked cloudiness of the right ethmoids and partial cloudiness of right antrum, all other sinuses normal.

Topical applications of the nose were done, one gram of sulfadiazine given every four hours for four doses, then one-half gram every four hours ordered, plus warm boric compresses and astringent and antiseptic nose drops.

He was seen the following day and it seemed as though the swelling was more pronounced, both lids approximated by swelling and the space between the inner canthus of the eye and the midline of the skull very much widened. The sanguineous discharge had persisted, but occasionaaly pus was noted in the drainage. The therapy seemed to stagnate things about this stage, the closure of the eyes was not so tight, the swelling somewhat softer, and there appeared rather frank suppuration in the nose.

On August 31, despite the fact that drainage was fair, swelling somewhat softened, palpebral opening broadened, there appeared a mild edema at the inner canthus of the opposite eye. Hospitalization was done at this time and penicillin added to the treatment already being done.

Sulfa determination at this time showed only a trace. Blood picture revealed 9,000 white blood cells with 6 per cent polys, 3,700,000 red blood cells with 78 per cent hemoglobin. Blood culture taken on admission was negative.

He had slight up and down temperature while in the hospital but never recorded more than 100° F. Twenty-five thousand units of penicillin given every three hours intramuscularly for 72 hours; was given a total of 600,000 units.

There was appreciable change in the right eye after 24 hours and the edema which had started up in the left eye had disappeared. After 48 hours the swelling had subsided to such an extent that he could open his right eye almost completely and the lateral displacement was less noticeable. After 72 hours such improvement had taken place that penicillin was discontinued. There remained only a pinkness of the lids with some displacement laterally and only minimal nasal discharge. Nasal care and sulfadiazine were persevered with for 48 hours longer, at which time improvement had been so complete as to allow the patient to be discharged.

DISCUSSION

The effects of the penicillin, sulfadiazine and limited nasal drainage far surpassed expectations. It was hoped that stabilization of the infection could be accomplished, at which time operation for complete drainage would follow, with hope for ultimate good results. Operation was never done because clinical improvement was so complete and fast.

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*Read before the Orleans Parish Medical Society, April 9, 1945.

He was carefully watched for a short period of time longer to safeguard against any exacerbations and nothing to this day has been noted.

X-ray pictures taken only recently, March 19, 1945, to check against previous films, show there is marked clearing of the ethmoidal region with some slight haziness of the right antrum. Clinically there is no evidence of any trouble in the nose, no recurrence of nose bleeds and the right eye has returned completely to normalcy.

DISCUSSION

Dr. E. Z. Browne (New Orleans): I would like to ask Dr. Thomas if he thinks penicillin helped to improve the ethmoiditis. Did it improve the sinus condition?

Dr. H. Ashton Thomas (in closing): I frankly believe it did, but of course I think drainage was helpful. I feel without penicillin I could not have waited on this case and would probably have had to use external drainage and such. The pictures show such improvement and I think this is due to penicillin; possibly due in part to sulfadiazine. I feel that acute sinus conditions could be helped by penicillin; but I do not think there is much hope for chronic conditions with these measures.

SOME NOTES ON THE EARLY HISTORY OF PULMONARY TUBERCULOSIS IN LOUISIANA*

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The early history of pulmonary tuberculosis in the state of Louisiana probably corresponds with the history of tuberculosis in the rest of the United States. There is no mention in the early medical literature of Louisiana of phthisis or consumption. Occasionally one finds in plantation records a slave listed as having died of the white plague. But until the 1840's the literature is barren in regard to tuberculosis, so much so that one may erroneously conclude that phthisis was unknown in the early history of our state. Of course this was far from the case. Tuberculosis was present and persons were dying from it, but it was so less spectacular than yellow fever, cholera or the various types of fevers then prevailing that the medical and lay public were not conscious of its destructive force. When the physicians became somewhat aware of the seriousness of the mortality rate from tuberculosis, many were the fantastic claims advanced by some as to the effectiveness of the therapeutic methods devised by them for the curing of this malady. So spectacular were some of these methods that probably one is justified in terming this early era the "sensational" period. This period did not last long as far as years go, but it was very interesting because of the methods advocated for the cure of tuberculosis.

The first of these "sensational methods" was by a Dr. Hall, who in 1844 published a pamphlet entitled, "Consumption Curable."[1] Just who was Dr. Hall, it is not possible to assert with any degree of assurance. He states that he is a resident of New Orleans from November 1 until May 1 of each year. From consulting the Index Catalogue of the Library of the Surgeon-General's Office, it was found that there were a number of pamphlets listed with similar titles written by Dr. William Whitty Hall (1810-1876), so one may suspect he was also the author of "Consumption Curable."

Dr. Hall was a graduate of Transylvania Medical College, one of the best medical schools in the United States at this time, so that one may classify him as a reputable physician.

In the beginning of his pamphlet, Dr. Hall gives a general description of consumption for the public. His description is probably not far wrong, and it comes rather as a shock to read that section entitled, "What do you do for consumption?" to find this introductory statement:[2]

"The most interesting reply, at least to the patient is—I cure it. Tubercles are absorbed, taken away or encysted. Large cavities are encased, small ones healed up. This is done in a manner not disagreeable, calomel, emetics, blisters, caustics, seatons and issues, not being used. It is accomplished by a method unknown to the world, until within a short time past, and the success which has attended the judicious employment of the means used, has been uniform, and encouraging in the highest degree. Already there are men of high moral worth, all over the Union, who are prepared at any day or hour, when properly approached to bear a decided, and grateful testimony in its favor."

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*Presented before New Orleans Parish Medical Society June 11, 1943.

Dr. Hall then describes how simple and beneficial is his treatment. Most patients require only one or two visits to his office, although a few must make several visits over a period of some weeks. He next cites a number of cases which he had treated and cured. In some instances patients were suffering from troublesome coughs, night sweats and expectoration of blood, but in all cases, after he prescribed, they immediately became better and were eventually restored to health. There were also several testimonial letters from grateful patients attesting to their cures.

By this time one becomes very curious as to the therapeutic methods of Dr. Hall since his successes were so extraordinary. However, when it came to divulging his remedy or treatment, Dr. Hall has this to say:[3]

"It is not designed at present to communicate the means employed . . . Let it, however, be distinctly noted, that I am under proper circumstances, perfectly willing to communicate all I yet know, to any well educated young physician of genius, talent, of a towering ambition, who will give suitable guarantees, that he will devote his whole life, exclusively, to the mode of practice adopted by me, and to its improvement, in the treatment of this one disease . . ."

Another cure for consumption was advanced by Dr. Samuel A. Cartwright, who at this time was one of the most famous physicians in the deep South. A bibliography of his writings includes over 80 entries. Writing in the Boston Medical and Surgical Journal for the years 1852 and 1855 he advanced a method for the cure of bronchial, dyspeptic and consumptive complaints, which became known as the "Sugar-house cure."

It was common knowledge among the sugar planters that during the grinding season those workers and slaves employed in the sugar-house gained weight, became cured of any bronchial disturbances, and a general improvement in their health was noted. Aware of this condition, Dr. Cartwright began recommending to those suffering from chest complains that they spend several weeks during the grinding season in the sugar-house, drinking the cane juice and inhaling the vapors from the kettles. Dr. Cartwright reported some remarkable successes by this method of treatment. His patients gained weight, in one case as much as 15 pounds in three weeks, coughs disappeared, and at the end of the season their health was very much improved. Dr. Cartwright makes no fantastic claims. He clearly states those suffering from advanced tuberculosis could expect no relief or cure by this method. However, so much publicity was given to this method of treatment that the sugar-houses were soon swarming with those seeking a cure, until the owners began to complain that their refineries were becoming nothing but dispensaries. Also it was becoming very inconvenient to have patients die on your hands.

Probably the clearest statement as to what was taking place in the diagnosis and treatment of tuberculosis of this period was editorially stated by Dr. A. Hester, then editor of the New Orleans Medical and Surgical Journal. Dr. Hester in reviewing the book entitled, "The Young Stethoscopist" made this comment:[5]

"But notwithstanding the perfection in our diagnostic means in thoracic disease, have we advanced the treatment thereof in anything like the same ratio? Has any method been devised by which a cavity can be made to cicatrize and heal; by which tubercles can be driven from the lungs, or, in a word, by which any serious organic disease of the lungs or heart can be permanently cured or even relieved. With a few exceptions we can answer these questions in the negative. We do not however, despair that the time will come when many of these diseases now considered incurable, will be made to yield to a more enlightened and rational system of therapeutics."

On the other hand this early period was not without its advances. Following in the footsteps of the great French clinicians, tremendous progress was made in the diagnosis of diseases of the chest as stated by Dr. Hester. Dr. Austin Flint, a leader in the diagnosis of chest disorders in the United States, held a professorship in the New Orleans School of Medicine for a few years and also gave private lessons in the art of percussion and auscultation. However, many decades were to pass before therapeutic methods were to equal the art of diagnosis.

During the war, and for some years following, medical culture made little advances in the state. It seems as if making a living was such an arduous task that very little time or leisure could be devoted to the cultivation of the art and sciences. One might say for this era that a hiatus existed as far as advances in medicine were concerned.

The year 1880 may be considered as opening a new era in medical advancement in Louisiana. In that year Dr. Joseph Jones became president of the State Board of Health. So great was the energy of this man that almost single handed he gave a new impetus to the advancement of medical culture in the state. Every field of medicine felt his influence. His "Memoirs" and the Reports of the Board of Health for the year of his presidency (1880-1884) are a mine of information as to the status of medicine in Louisiana. Undoubtedly, the statistics he compiled had a great deal to do with educating the medical public as to the danger of pulmonary tuberculosis.

The next period in the history of tuberculosis in Louisiana may be called the "bacillus" period, and if one wishes to be technical, we may let it run from 1882 to 1904. The first date is selected for in that year Robert Koch discovered the tubercle bacillus in the sputum; the latter date because in that year Dr. W. J. Durel introduced scientific methods in the treatment of tuberculosis by the establishment of his sanatorium in the environs of Covington.

The whole of this period is overshadowed by the fight over the recognition of the bacillus as the cause of the disease. It was many years after the announcement of this discovery by Kock that the bacillus became generally accepted as the cause of tuberculosis by the medical profession. The controversy over its acceptance involved the best medical minds of that day, and had its counter part in New Orleans. Dr. H. D. Schmidt, pathologist for the Charity Hospital from 1875 to 1887, a German emigrant, and an excellent pathologist, was one of those who opposed the acceptance of the bacillus at this time. However, it was Dr. Schmidt who first introduced the study of bacteriology to a New Orleans group. Gathering a number of young internists, as they were then called, among whom were Drs. Rudolph Matas, P. E. Archinard, A. McShane and a Dr. LaPlace and Dr. LeBlanc among others, he organized this group into what may be called the first pathological society in New Orleans and gave them their first introduction to bacteriology. In time, so great became the controversy over the recognition of the bacillus that Dr. George Lawrson was finally sent to Philadelphia to have the bacillus demonstrated to him. He was probably the first New Orleans physician to have this privilege.[6]

Another controversy that raged at this time was over the use of tuberculin as a vaccine. During the '90's, Dr. Karl Von Ruck of Asheville, North Carolina, was a strong advocator of the use of tuberculin therapy. He maintained a sanatorium at Asheville where many patients from New Orleans suffering from tuberculosis were sent for treatment. In October, 1895, a committee from the Orleans Parish Medical Society composed of Drs. J. H. Bemiss, John B. Elliott, Sr., Joseph Holt, A. J. Bloch, H. S. Lewis, E. Souchon, J. D. Bloom, Rudolph Matas, F. Loeber, C. Chassaignac, C. J. Landfried, A. McShane, P.

E. Archinard and O. L. Pothier, invited Dr. Von Ruck to come to New Orleans in order to demonstrate the use of antiphthisin. The experiment was commenced in November, 1895. All cases medical and surgical, were examined by their respective committees, in conjunction with Dr. Von Ruck. The average duration of the observations were from two to three months. The commission presented its report to the society at the regular meeting held March 28, 1896, about four months after the inauguration of the trial. The committee reported that from the tests, the curative value of antiphthisin was inconclusive and, as a whole, unproved, although some benefits were obtained from its use in early cases.[7]

Also during this period many fantastic remedies were brought forth for the cure of tuberculosis. Among them may be mentioned such therapy as living in dairies breathing the dung of cows, the taking of innumerable baths, the breathing of chloroform, the eating of grapes and the use of various serums. There was also the diet treatment which in one case consisted in the eating of large quantities of oysters, the consuming of large and frequent doses of hot water, and the eating of carefully chopped beef and stale white bread. Then let us not forget "Angier's Petroleum Emulsion" which claimed: (1) to antagonize the progress of the disease, (2) to palliate the symptoms; relieve the troublesome cough; reduce fevers and eliminate night sweats; (3) to pacify the irritable stomach, and make it receptive of food and medicines. The merits of this "Emulsion" were extolled in medical journals of 1905. Another remedy which had many supporters was the administering of creosote. Dr. E. M. Dupaquier in the July, 1903 number of the New Orleans Medical and Surgical Journal gave a rather extensive review of the history of this therapeutic agent; the means employed by him in the administering of this drug and his results.

But all of these remedies had their day and their supporters. Some were in vogue longer than others but in time all gave way before the modern concept of the treatment in sanatoria, and the employment of pneumothorax and surgery.

However, the story of the introduction of our modern methods of treatment in Louisiana, which began with the work of Dr. W. J. Durel during the first decade of this century must be told at another time. This is only a brief outline of what took place in the state during the first two epochs when the medical world was trying so hard to find the cause and arrest the course of the white plague.

In order to convey some idea as to the mortality from tuberculosis in New Orleans during these early years the following statistics are herewith appended. They were taken from the Reports of the Louisiana State Board of Health for the years 1881 through 1890.

MORTALITY FROM PULMONARY TUBERCULOSIS[9]
New Orleans

	Deaths		Population	
	W	C	W	C
1849	445	147	91,431	28,029
1850	528	146		
1853	582	173		
1877	513	375	140,923	50,456 (1870)
1880	517	346	158,367	57,617
1883	501	344		
1885	544	402		
1887	434	339		
1890	444	380	177,376	64,491

Probably if there are any comments to make one cannot help but notice the difference between the deaths among negroes prior to the War Between the States and afterwards. The mortality more than doubled for negroes although there was little change in the whites, notwithstanding the increase in population.

Another interesting comparison was made between the mortality from tuberculosis and the total death rate for the three different periods, 1844-65; 1866-80; and 1881-90.

MORTALITY FROM PULMONARY TUBERCULOSIS
New Orleans

	1844-65	1866-80	1881-90
Total deaths	67,236	45,524	65,464
white			41,483
colored			23,981
Death T.B.	12,368	11,703	8,644
white			4,898
colored			3,746
Percentage	18.0	25.8	11.7

Here again one may note the increase of the percentages of total deaths from tuberculosis following the war. From the number of actual deaths it can readily be seen that this increase was due to the increased mortality among the negroes. In time as the negroes began to learn to care for themselves, the percentage of total deaths began to decline.

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HISTORY OF BLOOD TRANSFUSION.*

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FOREWORD

The fascinating and romantic tale of blood transfusion is a true replica of the history of medicine itself. It begins with the superstitions of pre-historic peoples and trickles into the mystic dabblings of ancient alchemists and philosophers. It continues through tragic centuries of ceaseless groping and blundering to reach, finally, the discovery and development of the modern technics of today. The story does not stop there, but continues into the many new problems which were opened by every precious bit of truth that was uncovered. The tale is dynamic, moving, inspiring; and it symbolizes the Spirit of Medicine to which this chronicle is respectfully dedicated.

HISTORY OF BLOOD TRANSFUSION

No one knows exactly when the history of blood transfusion began. Although there is no record of it, pre-historic man certainly pondered over the mysteries of the red liquid that flowed from the bodies of injured and dying creatures. We know that ancient philosophers speculated upon the qualities of this substance, which they called a "vital force."[1] To them, it was the seat of the soul, since its loss was associated with the loss of life. They even tried to use it in the revitalization of the aged and debilitated, seeking to substitute young, vigorous blood for that which had lost its potency.

The methods by which they effected this substitution consisted of bathing in, drinking, and possibly infusing blood from young to old individuals. Blood baths were used by the Egyptian princes for resuscitation and recuperation.[2] Ovid[3] wrote of the powers of the sorceress Medea to restore youth by the use of draughts of blood. Celsus[4] deplored the custom of the Roman people who rushed into the gladiatorial arenas to drink the fresh blood that flowed from the veins of dying victims. On the other hand, Pliny[5] and Galen[2] both prescribed the drinking of gladiatorial blood as a cure for epilepsy and other diseases. The Egyptians, Syrians and Hebrews were all credited with performing "transfusions," while Greek and Roman writers are supposed to have witnessed them.

Thus, because of their desire to prolong and restore life, the ancients maintained an interest in the use of blood as a therapeutic agent. As a corollary, they also speculated on the origin and the circulation of blood. Aristotle[6,7] taught that the blood was formed within the chambers of the heart and flowed out to the various parts of the body, never to return. Centuries later, his concept was displaced by the idea that the arteries carried air directly from the lungs to the tissues. This concept, in turn, was finally displaced by the belief of Galen[2,7] who stated that blood was generated by the liver and moved back and forth in the vessels until it was consumed. Incidentally, like many of Galen's theories, this one persisted for a long time; it held undisputed sway for over 1400 years!

* * *

The first recorded attempt at blood

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*Presented before the History of Medicine Society, Tulane University, March 23, 1945.

"transfusion" occurred in 1490 A. D., when Abraham Meyre, a Jewish physician, attempted to "transfuse" the blood of three youths into Pope Innocent VIII. According to Villiari,[8] the Pope had had an apoplectic stroke the year before and had fallen, for sometime, into a kind of somnolence. All means to revive the exhausted Pope had failed, and, in desperation, it was agreed to place him under the care of a Jewish physician who proposed to do a blood "transfusion." From this point, the rest of the story is variously told and vigorously contested. Raphael Sabatini[9] says that too much blood was taken from the youths, and all of them died. The Pope, on hearing of this, was horrified. He refused transfusion and the physician fled. Other writers insist that the blood was withdrawn for the purpose of preparing a distillate which the Pope was going to drink.[2] On the other hand, many authors agree with Villiari[8] that an actual intravascular blood transfusion was attempted. This is supposed to have been unsuccessful, the Pope and the youths all dying of air embolism.

There is no assurance that the Pope received either a draught or a transfusion. If anything was done, he probably received a draught. During the Middle Ages, the drinking of blood was popularly considered as a health-restoring measure; and, in older records, the ingestion and "transfusion" of blood were often confused. One thing the authorities all agree on—the death of the Pope was not staved off; the three youths all died; and the Jewish physician fled as quickly as possible after the failure of his experiment.

The disastrous experiment of the Jewish physician must have stifled interest in blood transfusion, for no significant work was done until nearly one hundred years after this episode. In 1588, however, Andreas Libavius ,[10]a native of Saxony and professor of poetry and history at Jena, described in full the technic for the intravascular transfusion of blood from one human to another. His experiment was supposed to have been done by means of two interlocking silver tubes that connected the artery of a young man to the artery of an old man. "And," said Libavius, "the hot and spirituous blood of the young man will pour into the old one, as it were from a fountain of life, and all of his weakness will be dispelled. . . ."

The priority of Andreas Libavius, in suggesting intravsacular blood transfusion, however, is disputed. The dispute rests upon the sporadic references to blood transfusion found in the literature of the century that elapsed between the work of the Jewish physician and that of Libavius. During this century, the Renaissance had reached full bloom, and the ancient Greek and Roman writers were studied ardently. During the course of these studies, the ancient theories that described blood as the "staff of life" were uncovered; and they caused a number of writers[2] to suggest the possibility of transfusing blood from one human to the other. Unfortunately, however, these men did not describe the experiments they recommended, and Libavius is given priority for the idea.

However, there is some question as to whether or not Libavius actually believed in the experiment he described. His script is written in an ironical tone, and many historians feel that he wrote extravagantly, not because he was a serious advocate of blood transfusion, but simply to emphasize his contempt for the operation as quackery and charlantry.[11] Using this as a thesis for their arguments, the Italians claim priority for Jean de Colle, of Padua, whose writings seriously suggested blood transfusion in 1628, some thirteen years after the work of Libavius.[12]

This question, incidently, is of more than passing interest. If Libavius actually performed his experiments, he was indeed a brilliant man. He would thus have used intravascular blood transfusion before Harvey described the circulation of blood; and the technic which he described is very similar to that advocated by Bernheim in 1912.[13] Regardless of who first suggested intravascular blood transfusion, however, the idea had been born. Therefore, when Harvey electrified the scientific world, in 1616, with his discovery of the circulation of blood, the stage was set for the modern developments in blood transfusion to begin.

The year 1616 marks the beginning of the scientific approach to blood transfusion. Before this the experiments on this subject were prompted by vague notions of restoring and maintaining youth, and were attempted by a multitude of dabblers who often wrote fantastic theories and made extravagant claims without bothering to prove them. Harvey's work, however, was based on scientific observation; and, for the first time, it gave a firm, unquestioned foundation on which further experiments could be based and judged.[14]

Harvey, when he expounded his theory, held a position as physician to St. Bartholomew's hospital, having been appointed to that post in 1609. He stated his theory in 1616, during his lectures; but his work was not universally known until its publication in 1628. Once it was released, however, it stimulated, throughout the world, energetic experiments on the infusion of various substances into the blood stream.

* * *

No authentic reference to attempted blood transfusion can be found during the thirty years that followed Harvey's publication. However, a few interesting early claims do exist. In 1654, Franscesco Folli,[15] a Florentine physician claimed to have performed the first transfusion of blood, before the Grand Duke Frederick II. The instrument he used consisted of a silver tube, inserted into the artery of the donor, and a cannula of bone, inserted into the vein of the recipient; the two tubes were connected by a hollow pipe made from the blood vessel of an animal. It is possible that Folli actually performed the operation he described. However, after a complete investigation of the question, Mayerhofer feels that Folli merely explained the technic to the Duke Frederick, and did not actually attempt the experiment.[16,17]

The French also have several claims to priority in the performance of blood transfusion.[1] In 1653, Robert de Gabets, a Benedictine monk supposedly first demonstrated the possibility of transfusion, then performed the operation five years later. Even his instruments and technic (which are similar to those of Folli) have been described. Tardi, in 1667, also claims to have been one of the "inventeurs" of blood transfusion, and describes in detail the artery-to-vein anastomosis technic. However, these and other claims cannot be substantiated; and the identity of the first attempted human transfusion is still a mystery.

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In 1656, Sir Christopher Wren,[18] the astronomer, author and architect, experimented with the injection of various medicaments (such as ale, wine, scammony and opium) into the veins of dogs. He used a direct cannula connected to a bladder by means of quills. With this apparatus, he attempted to force the experimental fluids out of a container, through one of the quills, into the bladder, thence, via the second quill, into the animal's veins. Unfortunately, he lacked the present day valves and syringes, so that his experiment failed. However, though he did not realize it, he had designed the basic structure for all of our modern syringe methods of person-to-person transfusion. Furthermore, Wren stimulated his friends Wilkins, Robert Boyle, Clarke, and Henshawe to experiment with him; and these, in turn, led Richard Lower to begin his attempts at the transfusion of blood from one animal to another.

Most of the experiments done by these men were failures. However, in 1665, Richard Lower finally connected the artery of one dog to the vein of another and found that the blood flowed successfully from the atery of the donor into the vein of the recipient.[19] Before he hit upon this successful idea, Lower had performed innumerable evperiments with vein-to-vein anastomoses, only to find that the blood flowed so slowly that it coagulated in the anastomosing cannula. However, he knew from experience that the entire blood supply of an experimental animal could flow from its body, if a large vessel were injured and the blood flow were not obstructed. Reasoning from these facts, and applying Harvey's theories on the circulation of blood—namely, that blood was pumped by the heart from the arteries into the veins—Lower decided to try an artery-to-vein anastomosis, hoping that the blood would flow rapidly enough to prevent coagulation in the cannula. He based his hopes on the observation that blood flowed more freely from injured arteries than from injured veins. His observations and deductions were correct, for his first experiment with artery-to-vein anastomosis was successful. Lower performed his experiments in Oxford and later in London; and the news of his success spread throughout the world. He finally demonstrated his work to the Royal Society and created such a furor that Samuel Pepys mentions the demonstration in his diary,[20] saying:

> "Dr. Croone told me, that, at the meeting at Gresham College tonight . . . there was a pretty experiment of the blood of one dog let out, till he died, into the body of another on one side, while all his own ran out on the other side. The first died upon the place, and the other very well, and likely to do well. This did give occasion to many pretty wishes, as of the blood of a Quaker to be let into an Archbishop, and such like; but, as Dr. Croone says, may, if it takes, be of mighty use to man's health, for the amending of bad blood by borrowing from a better body."

Incidentally, other entries in Pepys' diary speak of a series of further trials of Lower's experiment to be done by the Royal Society. These trials included attempts to do human transfusion. Lower and other members of the Royal Society carried them out; and, finally, on November 30, 1667, Lower and King performed the first successful human transfusion in England, on a lunatic who received 20 shillings for his trouble. Sheep's blood was used for this transfusion; and this experiement was then used as proof of the then prevalent belief that human blood was less compatible with itself than with the bloods of other animals.

The work of Lower and King on human blood transfusion, however, was not the first of its kind. Even as Lower completed his early experiments in England, there worked, in France, a Montpellier physician, philosopher and mathematician. Jean Baptiste Denis,* who, in June, 1667, performed the first successful human blood transfusion and thus won for himself an immortal place in the annals of medical history.[21] Denis' first patient was a 15 year old boy who was suffering from an acute attack of an obscure fever. During his illness, the boy had been subjected to twenty venesections, which had failed to cure him and had left him in a state of apathy and exhaustion. As a last resort, Denis transfused the youth with nine ounces of blood from the carotid artery of a lamb; and a remarkable improvement followed.

His enthusiasm awakened. Denis, with his assistant Emmeris, performed a second transfusion on a perfectly healthy man. This was purely in the nature of an experiment, in which Denis removed ten ounces of blood by venesection and permitted approximately twice that amount to flow from the femoral artery of a lamb into the vein of his human subject. When the experiment was completed, the subject was rewarded financially for his cooperation. He then repaired to a public house where he spent his remuneration, without suffering any ill effects from the transfusion. Denis then became renowned as a great transfusor; and, at the same time, there arose a storm of hatred, opposition and jealousy that involved arguments concerned with metaphysics, religion and personal animosities.#

In spite of the storm of opposition, Denis continued his experiments. He performed a third transfusion on a moribund patient; this, however, served only to delay death for a few hours. Then, he began his fateful fourth transfusion, which developed complications that buried Denis and his operation for the next hundred and fifty years. This fourth transfusion was performed on a lunatic. In all, three operations were performed. The first two transfusions on this patient were successful and partially alleviated his mania. The lunacy, however, recurred; and, on the insistence of the patient's wife, Denis performed the operation for a third time. Following the last introduction of blood, the patient developed what we know today as a "transfusion reaction." Denis wrote that "his (the patient's) arm became hot, the pulse rose, sweat burst out over his forehead, he complained of pain in the kidneys, and was sick at the stomach. The next day, the urine was very dark, in fact black."[21] Following these findings, the patient died; and the enemies of Denis conspired with the widow to charge him with murder. There followed a prolonged legal battle, during which Denis counter-charged that the patient had been poisoned by his wife. Denis was finally exonerated, but further transfusions were prohibited unless they had the approbation of the Faculté de Médicin of Paris. Since most of Denis' enemies belonged to the Faculté, this decision was in fact the death knell of further blood transfusion in France. Ten years later, the French Parliament passed an edict prohibiting blood transfusion on human beings. In time, the procedure was also abolished by the Royal Society in England; and these actions so impressed the magistrates of Rome that they, too, forbade the operation.

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*Denis at this time, was also physician to Louis XIV

#Richard Lower, though not a violent opponent of Denis, wrote that Denis was trying to deprive him of credit which rightfull belonged to him.

In the face of such powerful opposition, the interest in blood transfusion waned, and the procedure was virtually abandoned for nearly a hundred and fifty years. The idea, however, could not be completely destroyed, and several timid attempts at transfusion occurred during this period of quiescence. On November 23, 1667, before the disastrous fourth transfusion of Denis, Lower and King[22] had successfully introduced sheep's blood into the veins of a human volunteer. In 1683, in Germany, Kaufmann and Putmann,[23] by transfusing lamb's blood, cured a case of leprosy, but failed to cure two scorbutic soldiers and a fisherwoman suffering from a "devouring eruption." Riva and Manfredi, in Italy, transfused two human beings with sheep's blood[7]; and Nuck, in 1714, and Cantwell, in 1749, recommended the procedure for severe hemorrhage and extreme emergencies.[1]

Furthermore, in 1792, several transfusions were performed at Cambridge by Harwood; and, in the same year, Russel of Suffolk is said to have cured, by means of transfusion, a boy suffering of hydrophobia. In 1796, Erasmus Darwin, the grandfather of the illustrious Charles, advocated blood transfusion for carcinoma of the esophagus and other diseases in which nutrition was inadequate.[7] Finally, in 1802, Paul Scheel,[24] of Copenhagen, was so convinced of the value of the procedure that he published a valuable monograph on the subject, containing a careful review of all the previous contributions to infusion and transfusion.

Nevertheless, these references were few in number, so that the study of blood transfusion was actually dormant from 1683 to 1818. Meanwhile, other medical sciences were making leaps and bounds. Anatomy and histology had almost reached full growth. The dangers of embolism and the results of the entrance of air into the blood vessels were finally recognized; and experiments on blood coagulation were also begun. Finally, Leewenhoek (1632-1723) discovered his "animalcules" and developed his lenses; by 1818, the science of bacteriology had been started. The stage was then set for blood transfusion to be resurrected. Before going into this, however, we must consider a very important contribution that was made during this period of quiescence. In 1783, Professor Rosa of Moderna, working under the direction of Scarpa, found that the blood vessels were able to adapt themselves to increased blood volumes. Thus, the preliminary venesections, which had always preceded blood transfusions and which had hitherto been considered absolutely essential, were proved unnecessary.[1]

The revival of interest in blood transfusion occurred in 1818, when James Blundell, a London physiologist and obstetrician, published his series of papers on blood transfusion performed by his "impellor"—

an apparatus he had devised for this purpose.[25,28] In his practice, Blundell had often witnessed severe, fatal postpartal hemorrhage, and he had felt the crying need for some way to return blood to the bodies of his exsanguinated patients. In desperation, therefore, he sought to revive the technic of blood transfusion, which had been in disrepute for so long a time. He, himself, felt sure of the usefulness of the procedure. particularly in obstetrics. He believed that the suspicion and fear that surrounded the operation were due to a lack of understanding of its principles and its indications. Once these were soundly worked out, he hoped to use the operation successfully against postpartal hemorrhage.

Blundell began his work by performing numerous experiments in order to determine whether or not venous blood was as good for transfusion as arterial blood, and whether or not the properties of blood were changed by its passage through instruments. His first experiments were done with dogs and the time-honored cannula. He modified the old technic by cutting the cannula and allowing the donors blood to flow into a receptacle instead of into the recipient's vein. From this receptacle, he aspirated the donor's blood into a syringe and injected it through the other end of the cannula into the recipient's vein. By this method, he proved that venous blood could be safely substituted for arterial blood, and that blood was not vitiated by its passage through a syringe. He then modified the ordinary syringe with a three-way stopcock, attached to the receptacle at one end and to the cannula entering the recipient's veins at the other. The stopcock was so arranged that it could connect the syringe either to the receptacle or to the cannula, depending on the way in which it was turned. The apparatus worked successfully, when Blundell tried it on his experimental animals.

The apparatus, however, was cumbersome, and Blundell finally designed his "impellor," an instrument in which the syringe was built into the wall of the receptacle while the function of the original stopcock was carried out by a system of spring valves at the base of the receptacle. The "impellor" appealed to other physicians of Blundell's time, and, since it facilitated blood transfusion, it served to revive interest in the operation. With his instrument, Blundell transfused ten patients, five of whom died. His first four attempts were desperate measures on moribund patients, and they all failed. Later on, however, he successfully transfused three women, in whom death from postpartal hemorrhage was almost certain. Two later attempts (a case of leg amputation, and one of uterine hemorrhage) were successful. The last case (one of ruptured artery) failed.

The work of Blundell is most important because he placed transfusion on a sound clinical and scientific basis. In addition to his experiments that proved the usefulness of venous blood and his development of instruments which find their expression in the modern syringe and its modifications, he was one of the first to establish the principle that only blood of the same species should be used for transfusion. He proved that blood lost none of its life-giving properties by passing through instruments; that blood from *any* artery (or vein) was satisfactory; that blood should not be injected too quickly; that air should be excluded from the injecting apparatus; that the injection of up to 20 c.c. of air was not necessarily fatal; and that it was not only unnecessary but also undesirable to transfuse as much blood as had been lost. When Blundell's work was completed, he had added considerably to the facts known about blood physiology and blood transfusion; and he had performed more successful transfusions than any man before his time.

However, even Blundell's work could not successfully establish the widespread clinical use of blood transfusion. Four great obstacles still faced the proponents of this operation. These were agglutination and hemolysis which resulted from the admixture of incompatible bloods; infection which accompanied the lack of aseptic technic; and blood coagulation which made direct transfusion difficult and indirect transfusion impossible. Under these circumstances, transfusion reactions and death were not uncommon, and the operation was only used as a last resort. It was not until these dangers had been removed that blood transfusion began to be widely applied.

Coagulation was the first problem to be attacked. In 1821, Prevost and Dumas[1] had corroborated Blundell's findings that the blood used for transfusion had to be of the same species; they also had experimented with defibrinated blood and blood rendered incoagulable by caustic soda. Dieffenbach[29] had supplemented their findings when he showed, in 1826, that fibrin suspended in water and serum had no power to restore life in exsanguinated animals. Finally, Bishoff,[30] in 1835, successfully attempted the introduction of defibrinated blood into animals and showed that blood from animals of another species was toxic while defibrinated blood of the same species was well tolerated. He also concluded, from this experiment, that fibrin was a toxic element in the blood; and he recommended the use of defibrinated blood above all other types that were available for transfusion at that time. Finally, in 1847, Larsen, at the suggestion of Panum,[31] successfully used defibrinated blood in the first human transfusion of this kind; and, later, in 1873, Sir Thomas Smith employed defibrinated blood in the treatment of a case of melena neonatorum in St. Bartholomew's Hospital. The use of defibrinated blood began to spread and a hotly contested battle arose between the opponents and proponents of this type of blood. The work that had been done was vigorously corroborated and questioned, and the opponents of defibrinated blood made attempts to overcome coagulation by the addition of various chemicals to blood; for example, sodium bicarbonate, sodium phosphate, or ammonia.[32,33]

Meanwhile, the application of transfusion was spreading. Fifty years after Blundell's work, in 1859, Edward Martin[34] collected 57 cases of transfusion in postpartal bleeding, with 45 recoveries and 12 fatalities. The fatalities were blamed on the introduction of air into the veins, although it is more likely what they were due to the use of incompatible blood. Ten years later, over 155 cases of blood transfusion had been collected[1]; and, finally, Landois,[35] in 1875, reviewed the literature and reported 374 cases of human-to-human and 129 cases of animal-to-human blood transfusions.

Concomitantly, significant studies were being made by Magendie and Brown-Sequard, Jacob-Mueller, Panum, and Landois[1] on the physiology of blood; on the febrile reactions following transfusion; and on the fate of heterologous corpuscles. In 1869, Creite[7] described the clumping of human red blood cells whenever they were placed in sera of other species. Landois, in 1875, then found that this agglutination and hemolysis reaction always occurred whenever bloods of heterologous species were mixed with each other. He thus first satisfactorily explained the hemoglobinuria that followed heterologous transfusions.

By 1875, the indications and rationale for blood transfusion were remarkably well understood, and Chadwick[36] classified the known methods of blood transfusion into four groups: (1) transfusion with defibrinated blood; (2) mediate transfusion with pure blood; (3) immediate transfusion from vein to vein; and (4) immediate transfusion from artery to vein. With this as a beginning, the indications were expanded until they included treatment for carbon monoxide poisoning, poisonings of other types, sepsis, and leukemia, as well as hemorrhage and severe inanition.

Meanwhile, in America, where little work had been done before Blundell's time, scientists were stimulated by, and kept pace with the developments in Europe during the nineteenth century. It is difficult to determine when the first transfusion was done in this country. Channing,[37] Jackson,[38] Benedict,[39] and Rouanet[40] were some of the earliest American proponents and discussors of blood transfusion. Benedict,[39] in 1853, in New Orleans, presented a report of a committee investigating this subject and stated that "they were not aware of the operation ever having been performed in America up to that time." However, the

Philadelphia Journal of Medical Sciences, in 1825, while commenting on the work of Blundell, tells of a similar transfusion experiment done by Dr. Physic in America some 30 years before.[41] In addition, Jones,[42] in 1833, reported the use of blood transfusion in a fifty-year-old female with "tuberculous disease of the lung." Finally, Flint,[43] in 1860-61, transfused a moribund patient in New Orleans; and Braman,[44] in 1867, described a case of excessive hemoptysis which was saved by a timely transfusion. Towards the last years of the nineteenth century, the list of transfusions performed in this country was growing rapidly, and the operation had definitely become established in the United States. Finally, in 1874, Barker[45] made a plea to the medical profession not to save the procedure as a last resort, but to use it early, before the patient had lapsed into extremis.

During the last quarter of the nineteenth century, the operation gained favor throughout most of the scientific world; and it should have remained without prejudice up to the present day. However, the growing interest in blood transfusion also created an exaggerated enthusiasm among the proponents of the operation, and many of the facts and principles that had become established during the preceding centuries were disregarded. The indications were expanded until they included such fantastic maladies as "the burnt, the uremic, the syphilitic and the mad"—and, once again, claims of cures were made without the backing of scientific proof. At the same time, the difficulty of obtaining human donors caused many physicians[46,47] to revert to the use of animal blood*—with consequent severe transfusion reactions and fatalities. Some workers[48,49] even went so far as to suggest the use of other animal fluids (for example, milk) in place of blood, saying that "this operation will, in a few years, have superseded the transfusion of blood."[50] Fortunately, this latter suggestion died a quick natural death, but not before several fatalities had occurred. All of these events caused the operation to fall again into disrepute; once more, it was regarded with fear and suspicion and was reserved for use only as a last resort. In addition, it was just about this time that physiologic saline was developed, and its efficacy led to the virtual abandonment of blood transfusion until the beginning of the next century.

Incidentally, during the nineteenth century, especially during the latter half, bacteriology and immunology continued to develop, almost without any relation to the development of blood transfusion. However, the development of these sciences made an important contribution to blood transfusion. With the increasing knowledge about microorganisms and septic processes, there followed the development and the use of aseptic technic; this finally automatically eliminated one of the biggest dangers in blood transfusion—the introduction of infection into the blood stream of either the donor or the recipient. At the same time, as more became known about the etiology and pathogenesis of infectious diseases, it became obvious that many diseases had the causative organisms in the blood. Methods of detecting these organisms (or their products) were to be developed, in order to forestall the transfusion of infected blood into non-infected individuals.

* * *

The beginning of the twentieth century found the proponents of blood transfusion still perplexed with the problem of agglutination and hemolysis resulting from the admixture of heterologous bloods. The problem had first been encountered during the transfusion of animal blood into human beings. It had been made even more acute, however, by the discovery that human bloods were sometimes incompatible, transfusion reactions occurring much too often, in spite of the use of human donors. A hint as to the nature of these transfusion reactions came in the field of immunology, when Bordet,[51] in 1865, discovered that the introduction of non-species-specific red blood corpuscles into the blood stream would result in the formation of hemolytic antibodies in the serum of the recipient. Ehrlich and Morgenroth[52] later proved the specificity of these agglutinins and hemolysins for the particular type of foreign corpuscles that were introduced.

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*Gesselius, in Russia, and Hasse, in Germany, first revived the use of lamb's blood. They blamed their severe reactions on "acute plethora."

Then, in 1900, probably the most important single contribution to the development of blood transfusion was made, when Landsteiner[53] and Shattuck[54] both independently demonstrated the presence of isoagglutinating antibodies and isoagglutinable corpuscles in human blood. The following year, Landsteiner[55] described three blood groups, with respect to their agglutinating reactions, and discussed their practical significance. In 1902, a fourth group was added by De Costello and Sturli.[56] Finally, in 1907, Jansky[57] worked out the reciprocal agglutination reactions of all four groups and classified them accordingly. Unfortunately, however, his publication was in the Bohemian language and was relatively inaccessible. Three years later, Moss,[58] working independently and unaware of the Bohemian publication, confirmed Jansky's findings, but inadvertently transposed groups I and IV of Jansky's classification. Moss's work gained widespread recognition; and, when Jansky's work finally became known, the unfortunate transposition of groups I and IV created a great deal of confusion. Finally, in 1921, a committee of the American Medical Association[59] reviewed the question and recommended that, in view of the three years' priority, the Jansky classification be adopted. This recommendation, however, failed to clear up the confusion, since the use of the Moss classification persisted. Today, the question is being settled by the adoption of the Landsteiner groupings (A, B, AB, and 0). This is of distinct advantage because the nomenclature wording is based on the types of isoagglutinogens present; this fact makes the reactions of each particular group easy to remember.

The work of Landseiner and the men who followed him eliminated one of the greatest obstacles to the widespread clinical application of blood transfusion that its proponents had had to face. Therefore, the discovery of isoagglutination created a great furor in the scientific world; and, even as the Landsteiner theory was being developed, workers began to emphasize the significance of blood grouping in the performance of blood transfusion.[60] Finally, in 1908, Ottenberg[61-63] and his associates developed and applied technics for the clinical determination of blood groups. Since then, their technics have been improved, and they are now an indispensable part of the blood transfusion operation, as we know it today.

* * *

With the elimination of the dangers of agglutination and hemolysis, attention was once more focused on the still unsolved problem of the coagulation of blood, which had plagued the proponents of blood transfusion since the beginning of the history of the operation. Bishoff,[64] in 1835, had made a forward step in the solution of the problem, when he described and recommended the use of defibrinated blood. However, this had been found to be awkward and dangerous; fatalities were reported, and the technic soon lost its popularity.* Therefore, after 1900, attempts were made to utilize whole blood either by: (a) the prevention of the coagulation of blood by physiologic methods; or (b) the rapid transfer of blood before coagulation could occur; or (c) the addition of anticoagulants to the blood as it was withdrawn from the donor.

THE PREVENTION OF COAGULATION BY PHYSIOLOGIC METHODS

Carrel,[67] in 1905, ushered in the use of physiologic methods with the development of a method of suturing the artery of the donor to the vein of the recipient. The fact that blood did not clot so long as it remained in contact with intima alone was thoroughly appreciated at that time; and Carrel attempted to prevent the blood from contacting anything but intima, by his arteriovenous anastomoses. This method of direct transfusion was successful and it was used for several years. However, considerable dexterity and surgical ability were required in order to anastomose the vessels properly. Because of this, Crile,[68] in 1907, developed a cannula which considerably simplified the intima to intima approximation. Crile's cannula consisted of a simple tube, through which the vein could be pulled then cuffed back and tied securely. The donor's artery could then be drawn over the cuffed part of the vein, thus establishing intimal continuity without the necessity of a suture anastomosis.

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*(a) Some attempts have been made to restore this technic, but they have not been successful[65,66] (b) Koehler, in 1877, showed that defibrinated blood contained an excess of fibrin ferments which exerted a hemolytic action on the recipient cells and produced severe transfusion reactions.

Crile's method was far superior to Carrel's technic, because it could be done by any surgeon; it did not require the delicate surgical skill necessary for vascular anastomosis. In addition, the thromboses which sometimes occurred at the suture lines of the anastomosed vessels in Carrel's method were avoided by Crile's technic. Therefore, the latter method and its modifications[69-72] became the accepted means of direct transfusion for many years.

Both the Crile and the Carrel methods, however, depended upon the direct anastomosis of the donor's artery to the recipient's vein. As such, they possessed certain disadvantages. They almost invariably required the sacrifice of an artery of the donor; and they did not permit the accurate measurement of the amount of blood administered. They allowed the contact of open wounds of the recipient and the donor, and thus permitted better transmission of infectious diseases from one person to the other. In addition, the anastomoses were so delicate that movements of the donor or the recipient often tore them open, necessitating the cessation of the operation until they could be repaired. Finally, embolism sometimes occurred, especially in the Carrel technic, leading to death, paralysis, or other embolic mishaps.

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A partial answer to the above disadvantages was provided by Brewer and Legett,[73] in 1909, and Curtis and David,[74] in 1911. Some years before the work of these men, Freund,[75] and Bordet and Gengou[76] had discovered that paraffin or vaseline-coated vessels delay the coagulation of blood. Using this fact as a basis for their experiments, Brewer and Legett developed a paraffin-coated cannula which was used for direct transfusion. Later on, Curtis and David also applied the paraffin coating principle to develop a Y-shaped paraffin-coated tube, having outlets for the recipient and donor vessels at one end, and an opening for the attachment of a syringe at the other end. This apparatus not only separated the wound of the donor from that of the recipient, but also afforded a means of measuring the amount of blood transfused. It gained a measure of popularity, and formed the basis for the tube devised by Kimpton and Brown, two years later.

The original Kimpton-Brown tube[77] consisted of a glass cylinder, tapering out at its lower end into an S-shaped cannula and having a perpendicular tube at its side. By means of a pressure pump attached to the side tube, the pressure inside the tube could be varied from negative to positive values (simply by reversing the flow of air, into or out of the tube). Thus, blood could be withdrawn from the donor's veins via the S-shaped lower end, or injected into the recipient's veins via the same route, depending upon the pressure inside the apparatus. This tube became very popular, and its various modifications[78,79] are still in use today. It had (and still has) certain disadvantages, however. The tube and all its connections had to be accurately lined with paraffin; and its use required a certain amount of skill on the part of the operator and his assistants.

Incidentally, there has appeared relatively recently, in Germany, a phenol-formaldehyde condensation product called "Athrombit" with which blood can remain in contact for at least 30 minutes without coagulating.[79] This substance is a plastic, and it has been used to make apparatuses similar to those of Kimpton and Brown. These are supposed to serve the same purpose as the Kimpton-Brown tube, with the added advantage of not requiring paraffinization.

THE USE OF RAPID TRANSFER METHODS

Following the work of Crile and Carrel on direct transfusion, the rapid transfer of blood was developed. The earliest application of this principle occurred in 1913, when Lindeman[80,81] revised and improved the multiple syringe method, described by von Ziemssen in 1892.[82] Lindeman utilized cannulae pushed into the veins of both the donor and the recipient and kept closed by obturators. On removal of the obturators, large syringes could be attached to the respective cannulae, first to withdraw blood from the donor's vein, then to inject it into the recipient's vein. This procedure was tedious and required coordinated action by skilled operators, so that it never became popular. However, it is of historical importance because it led to the development of the syringe-valve method of blood transfusion.

The syringe-valve technic, the obvious next step from Lindeman's method, was introduced, in 1915, by Unger.[83]* The apparatus was strikingly similar to the instrument that been introduced by Blundell, in 1825. Like Blundell's instrument, it consisted basically of a movable stopcock which could be rotated so that the vascular systems of the donor and the recipient could be alternately connected with a blood-pumping syringe. However, the stopcock devised by Unger provided the added feature of the reciprocal connection of the two vascular systems with a syringe containing saline. By this arrangement, the vessel, from which blood was not being withdrawn at that particular time, could be kept open by saline infusion. This was an important advance in blood transfusion, and numerous modifications of Unger's syringe-valve technic have appeared to this day.[84-87]

THE USE OF ANTICOAGULANTS

By far, the most important method of avoiding the coagulation of blood was the addition of anticoagulants. The first attempt in this direction was the suggestion and use of sodium phosphate, in 1869, by Braxton Hicks.[88] This was soon discarded, however, because of its harmful systemic effects. Later on, in 1892, Landois[89] suggested the use of hirudinin as an anticoagulant. His suggestion was followed by Satterlee and Hooker,[90] in 1914, but, as in the case of sodium phosphate, it was found that the amount of hirudinin required for the prevention of coagulation produced severe toxemia. Since then, other chemicals have been suggested and used—for example, sodium iodide,[91] arsphenamine,[92] and heparin.[93,94] All of them showed some important disadvantage.

The use of heparin is interesting. The donor was given enough heparin intravenously to increase the coagulation time to 20 minutes, so that the transfer of blood from the donor to the recipient could be done without fear of coagulation. The obvious disadvantage of this technic, however, was the danger of prolonging the recipient's coagulation time, with subsequent danger of hemorrhage. The proponents of this method said that this did not occur. However, the technic, which is still being worked on today, has not yet been developed to the point of complete safety.

One of the most important forward steps in the use of anticoagulants was made by Hustin, in 1914, in Belgium, when he used sodium citrate and glucose to prevent the coagulation of blood.[95] On November 14, of the same year, sodium citrate was used alone for the same purpose by Agote,[96] in Buenos Aires. The following year, Lewisohn[97] and Weil,[98] working independently in the United States, determined the upper and lower limits of the dosage of sodium citrate, and developed a simple technic for the addition of citrate to the blood as it was being withdrawn from the donor.

It is not necessary to go into the work of these two men, for it withstood the test of time and it is used very widely today. The simplicity of their technic made it possible to transfuse blood without trained assistants and without excessive discomfort to the donor or the recipient. This placed blood transfusion at the disposal of the average physician; and, when citrated blood was adopted by the armies engaged in World

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*Other early syringe-valve developments were those of Freund, Bernheim, Kush, Miller, and others.[1]

War I, the technic for the citration of blood was standardized and was distributed throughout the world.

* * *

The development of the use of citrated blood, and the increased demand for blood transfusion occasioned by World War I stimulated a tremendous amount of research on the problems of this operation. Soon, blood transfusion became a science with many branches, some of which made important contributions to other phases of medicine. Each branch has had its own long story, which cannot be fully told here. Only the origin and early development of the most important branches can be considered in this paper.

The more recent development of blood transfusion can be divided into four major movements:

(a) The development of extra sources of human blood, outside of living donors.

(b) The development of methods for storing blood for long periods of time. The story of the Blood Bank.

(c) The development of blood substitutes and blood derivatives.

(d) The study of blood and blood physiology for its application in medical diagnosis and treatment.

THE DEVELOPMENT OF EXTRA SOURCES OF HUMAN BLOOD

The difficulty of obtaining donors, and, later, the frequency of transfusion reactions which followed the use of citrated blood prompted the search for extra sources of blood. The first difficulty was gradually overcome by education of the public; the second is still with us, although its seriousness has been decreased. The second difficulty was discovered by Beck[99] and others who showed that the incidence of reactions with citrated blood was almost three times as great as with unmodified blood. A great controversy arose over this problem, despite the fact that most of the reactions were mild—consisting of little more than chills and fever. An attempt was made to find the cause for these reactions; some of the explanations were:

(a) Prolonged exposure of the citrated substance to foreign substancea.[100]

(b) Deleterious effects of citrate on the platelets.[101]

(c) Reduction (by the citrate) of the phagocytic and opsonic index of blood.[102]

(d) The increase (by the citrate) of the fragility of the red blood cells.[103]

(e) Certain biologic and chemical changes in the blood produced by the citrate.[104]

The proponents of the citrate method, however, blamed the reactions on the use of unclean apparatus and improperly distilled water.[105] This has been found to be true, through bitter experience; the powder used on rubber tubing is particularly active in producing reactions.[106] Nevertheless, even the proponents of the citrate method feel that citrated blood is unphysiological. Therefore sources of unmodified blood were sought.

Autotransfusion: The first attempt to find an extra source of blood was the use of autotransfusion, that is, the reintroduction into the patient's veins of his own blood, which has been lost into his serous cavities by internal hemorrhage. The procedure was first suggested by Highmore, in 1874,[107] but it was not actually attempted until 1914, when Thies[108] successfully revived three pulseless patients by autotransfusion of blood lost into the peritoneal cavity. The operation was enthusiastically accepted and the procedure was applied to injuries to the liver and spleen, to ruptured ectopic pregnancies, as well as to penetrating wounds of the thorax (bleeding from lungs and heart).[109] In time, however, fatalities following autotransfusion were reported, and the procedure has come to be used only in extreme emergencies, where blood donors are too few or not available.

Cadaver Blood: The next attempt to obtain blood from sources other than living human donors came out of Russia. It involved the use of cadaver blood. Shamov first suggested the procedure in 1927 and began animal experiments upon the problems involved.[110] Later, Yudin[111] first successfully administered cadaver blood into the veins of a nearly exsanguinated Muscovite engineer who had attempted to commit suicide by slashing his wrists. The attempt at the use of cadaver blood was successful, and Yudin introduced the procedure into his services at the Sklyfosovsky Institute, where he was in charge of the entire surgical and accident departments. By 1930, he was able to report seven cases, all successful, to the Fourth Congress of Ukranian Surgeons at Karkov.[109] In choosing the donors for cadaver blood, only those persons dying from coronary thrombosis, electrocution, cerebral hemorrhage, street accidents and other sudden catastrophes were used. Those dying from crushed limbs, intestinal wounds, severe cranial injuries, and drowning were not utilized. Before drawing the blood, a careful autopsy was done to eliminate any disease or malignancy. Then the blood was withdrawn from the superior and inferior vena cavae. About two to three liters of blood could be obtained from each cadaver. The blood was withdrawn within six hours after death; it was utilized within three weeks after its withdrawal. Skudina et al.[112] found that cadaver blood "disagulated" within one to one and a half hours after death and remained fluid; this fibrinolysis thus made the addition of citrate to cadaver blood unnecessary. Cadaver blood therefore became the nearest approach to unmodified non-coagulating blood that has yet been found. In addition, it is cheap, it can be kept for longer periods of time (because it contains no citrate), and it gives fewer reactions because it contains no foreign material. However, the procedure was not widely adopted because it is aesthetically unsuitable and not absolutely necessary.

Placental Blood: The third major attempt to obtain extra blood was the removal of blood from "afterbirths." This procedure was also originated in Russia. Buskin,[113] in 1936, at the Oncological Institute in Moscow, used this type of blood for massive transfusion in surgical patients. Later on, the procedure was adopted in the United States,[114] the blood being collected aseptically, tested, typed, and preserved in the same manner as blood from living donors. This method is not as great a source of blood as the cadaver technic; but it is more suitable, aesthetically speaking. In addition, the placental blood has certain advantages in its high hemoglobin and erythrocyte count and in its 20 to 30 per cent higher coagulating power.

THE HISTORY OF THE BLOOD BANK

One of the greatest forward steps in the recent history of blood transfusion has been the development of methods of preserving blood outside of the human body, in a state suitable for transfusion. The importance of this development cannot be overemphasized; for, properly used, it provides the doctor with a constant, dependable source of blood at all times.

This new field in blood transfusion was opened, in 1916, by the discovery of Rous and Turner[115] that red corpuscles could be kept alive for four weeks in a mixture of three volumes of blood, two volumes of aqueous solution of sodium citrate and five volumes of dextrose solution. Russia then contributed another preservative, composed of a solution of sodium and potassium chlorides, sodium citrate, and magnesium sulfate in distilled water;[116] but this formula was found to be less effective than that of Rous and Turner.[117]

Following the development of methods of preserving blood, attempts were made to establish permanent depots where blood could be stored until it was needed. With this underlying principle, a "banking" system of blood storage was gradually devised. The first experiments in the storage of blood were conducted, in 1936, at the Sklyfavosky Emergency Hospital, in Moscow, where the first blood bank was established.[118] The first mass application of preserved, stored blood was attempted during the Spanish Civil War, when a Barcelona blood bank sent blood to the front lines, utilizing some 9000 liters of blood.[119]

The first blood bank in the United States was established at the Cook County Hospital, in Chicago, in 1937.[120] The second was located at the Philadelphia General Hospital, in 1937;[119] and the third appeared, in 1939, at King's County Hospital, in Brooklyn.[121] Since then, the movement has spread until today nearly all the large hospitals in the United States have adopted the blood bank.[122] Today, incidentally, the preservative that seems to be most favored is the ordinary isotonic sodium citrate-physiologic saline solution devised by Lewisohn[97] and Weil.[98] The blood is collected in sodium citrate and preserved by keeping it at a low temperature, ranging from 1° to 8° Centigrade (Av.=4°). Under these conditions, the blood has been found to be usable with maximum safety up to 10 days after its withdrawal; and, in dire need, its therapeutic usefulness could be extended to 30 days after its withdrawal.[109]

The management of the blood bank, as it has evolved through the years, is too lengthy to discuss in detail. Suffice it to say that the donor is chosen on the basis of age (18-45), sex (males preferred), general health, freedom from communicable diseases, and miscellaneous (must not have eaten within three hours before the blood is drawn, and must not have ingested alcohol within five hours before the blood is drawn). After a routine Wassermann examination, the blood is typed and "deposited" or stored under the name of the service from which it came. It may then be "requisitioned" by that service as needed.

Recently, new technics have been introduced into the above procedure. In order to prevent transfusion syphilis resulting from donors who are in the pre-serologic stage of the disease without visible lesions, it has been suggested that mapharsen be added to the blood before transfusion.[123] Other workers have found that the storage of blood for four days before transfusion will allow the *Treponema pallida* to deteriorate, thus eliminating the danger of transfusion syphilis.[124] Meanwhile, Novak[125] has found that sulfonamides, added to the blood, will prevent and control bacterial contamination.

The technic of the blood bank has been applied in this present World War II. The increased demand for blood has led to the establishment of mobile blood banks which function at the various battlefronts. The typing of all military personnel before they reach the battlefront makes it possible to give the wounded transfusion after a simple cross-matching test.

THE DEVELOPMENT OF BLOOD SUBSTITUTES AND DERIVATIVES

As more facts became known about blood chemistry and physiology, many workers attempted to develop blood substitutes and blood derivatives for use in cases in which whole blood was not available. The earliest attempts were made with saline infusion. However, this was found to be unsuitable because it has too transient an effect. In 1895, Starling emphasized the importance of osmotic pressure relationships in the maintenance of blood pressure.[1] Following this work, many attempts were made to substitute colloidal and crystalline solutions of high osmotic pressure for the less available whole blood. These included various salt solutions,[1,109,126] glucose solution, gelatin, gum acacia, isinglass, pectin, ascitic fluid, amino acid mixtures, hemoglobin-Ringer solution, red corpuscles suspended in saline, hemolyzed blood, and, finally, blood plasma and serum. With the exception of blood plasma and blood serum, the other substances have been of little use;* most of them have proved unsatisfactory for one reason or another. Amberson[127] discusses in detail some of these substitutes and derivatives and concludes that "there is no complete substitute for blood."

The studies on plasma and serum have been carried on for years. Over seventy years ago, perfusion experiments with these elements were done by many European investigators.[128-132] Then, in 1907, Gutherie and Pike[133] found that these substances were effective in the treatment of hemorrhage. These observations were confirmed, and, during World War I, the use of plasma was suggested by several workers.[134,135] The procedure was not extensively used, however, until recently, when the usefulness of plasma in hemorrhage, shock, burns, and hypoproteinemia was definitely established.[136-140] Following these experiments, the story of plasma and serum is essentially one of the development of technics for withdrawing, storing, and administering these blood derivatives. The highlights of this story are the development of pooled and citrated plasma; and the discovery of the preservation of plasma and serum by drying and freezing.

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*Some of the derivatives are useful in special instances; for example, suspended red corpuscles are useful in severe anemias; amino acid mixtures and glucose solutions are useful in restoring nutrition; and so on.

One of the great controversies in this field revolved around the question, "Should plasma or serum be used?" The question is almost an academic one, however, since both elements are human colloidal protein blood derivatives. For practical purposes, they are interchangeable. Strumia prefers plasma because it does not result in as many transfusion reactions as serum.[141] Others, however, prefer serum because it does not contain citrate and because fibrin precipitates do not occur during storage of serum.[142] The argument may be summarized by saying that both of these derivatives are useful—especially in burns and shock. The preference for one over the other depends largely on the circumstances pertaining to collection and preparation of the derivatives. Plasma is generally preferred because: (a) it yields a greater bulk of material when treated by centrifugation; (b) it has fewer reactions, due not so much to the citrate as to protein sensitivity; and (c) it can be easily collected and prepared in conjunction with the present day conduct of the blood bank.

THE STUDY OF BLOOD FOR MEDICAL DIAGNOSIS AND TREATMENT

As blood transfusion developed, the most dramatic phase of its history unfolded; the facts which had been collected through the years began to be applied in the diagnosis and treatment of disease. This field is extremely wide and only the most striking episodes will be mentioned.

One of the marks of progress in the history of blood transfusion has been the gradual expansion of the indications for the operation, until today they include the following:[1,109]

I. Hemorrhage
  A. Traumatic
    1. Non-operative
    2. Operative
  B. Vasculo-erosive
    1. Consequent to local disease
  C. Hemorrhagic States
    1. Defective coagulating mechanism
      a. Hypoprothrombinemia
      b. Thrombocytopenia
      c. Hemophilia
      d. Fibrinogenopenia
    2. Vascular defect.
II. Peripheral Circulatory Failure (Shock).
III. Preoperative and Postoperative Therapy.
IV. Hypoproteinemia.
V. Blood Dyscrasias.
  A. Hemorrhagic States (see above).
  B. Anemias
    1. Anemia of blood loss.
    2. Increased erythrocyte destruction.
      a. Hereditary forms
      b. Acquired forms
    3. Defective blood formation
      a. Deficiency in essential factors
      b. Depression or destruction of erythrocyte-forming centers
  C. Leukemia and Leukopenia.
VI. Infections.
VII. Intoxications and poisonings.
VIII. Debility.

For the most part, ordinary whole blood will suffice, regardless of the disease. However, there have also been developed special transfusion technics which are useful in therapy. Some of these are:

Immunotransfusion: This refers to the transfusion of blood from a previously immunized donor, into a recipient who is suffering from the same disease. Two types of immunotransfusion have been developed: (a) specific, and (b) non-specific.

Specific immunotransfusion was recommended in 1914 by Hooker and Saterlee[143] who reported marked improvement with this therapy in a case of *staphylococcus aureus* osteomyelitis and septicemia. Their work was confirmed by Wright[144] in 1919 and the procedure has since been used in numerous maladies. The use of convalescent serum has been found superior to the serum of patients inoculated with a specific vaccine. Such a serum has been useful in measles, septicemias, undulant fever, whooping cough, diphtheria, and pneumonia. Antiserum has also been used for prophylaxis against these diseases.

In 1923, Colebrook and Storer[145] found that hemo-bacterocidal power of blood could be increased by inoculating the prospective donor with staphylococcus, streptococcus, and *B. typhosus* vaccines. This serum then has an increase in non-specific antibodies or opsonins. Since this method of inoculation is simpler than the administration of specific vaccines, the procedure has received widespread attention—particularly in acute infections. The onset of chemotherapeutic agents has curtailed the use of this procedure somewhat, but it is still a potential therapeutic weapon.

Exsanguinotransfusion: This is the simultaneous withdrawal of the recipient's blood and its replacement by blood obtained from a healthy donor. The procedure was suggested as early as 1885 by Whittell[146] and was performed, in 1916, by Burmeister.[147] It is a useful procedure in acute poisonings of various types, serving to dilute and disperse the poison in the recipient's blood.

Reciprocal or Exchange Transfusion: This refers to the simultaneous, continuous introduction of equal amounts of blood from the donor to the recipient and from the recipient to the donor. This procedure was performed experimentally by Nyiri[148] in 1926. The work was extended by Thalhimre, Solandt and Best.[149,150] The procedure has been applied to patients with kidney damage, where the donor's kidneys could be used to decrease the urea levels in the recipient's blood, until the recipient's kidneys had recovered from a critical non-functioning state.

Studies in hemagglutination have led to the discovery of new blood agglutinins, in addition to those found at the beginning of the twentieth century. A study of post-transfusion hemolytic reactions has resulted in the concept of the Rh factor.[118] This has served to explain erythroblastosis and some of the heretofore unexplained transfusion reactions. It has opened a whole new field of research which is being exploited today.

Furthermore, Landsteiner and Levine have described agglutinogen factors M, N, anl P.[151,152] In addition, type A cells have been shown to be slightly different in individual cases, so that A^1 and A^2 agglutinogen factors have been discovered.[153-155] Allergic reactions following transfusions have been observed and investigated.[156-158] And the dangers of the "universal donor" have been established.[159,160] Finally the transmission of disease by transfusion has been virtually eliminated. Since the first reported cases of transfusion syphilis[161] and malaria[162] studies have been conducted on the detection of infectious agents in blood until, by today, this is no longer a menace.

In closing, one final point must be made. Today, our attention is primarily occupied by indirect transfusion, so much so that we are apt to forget that, not so many years ago, before citrate had been fully developed, direct transfusion was the only available practical form of blood transfusion. This form of transfusion has also been developing through the past few decades; and it has reached a high peak of clinical applicability. The history of its development begins in the early attempts at rapid direct transfusion already mentioned. Some of the more recent contributions to its development have been made here at Tulane University. DeBakey and Gillentine have developed the syringe sleeve-valve apparatus;[87] and one of the most popular methods of direct transfusion in use today is the continuous flow apparatus developed here, in 1937.[163]

AFTERWORD

The final chapter in blood transfusion has not yet been written. It is true that the operation has been developed to a point where it can be used clinically; but, in the course of its development, scientists have uncovered not one but many new fields of scientific research. For every problem that has been solved, a hundred new ones have arisen to take its place; and the advances which can be and are being made relative to blood transfusion deal with practically every phase of modern medicine.

No one can predict how far this research will lead us. But the future is in good hands. The Spirit of Medicine which has worked patiently and obstinately through the centuries will continue to yield the fruits of its labors for the benefit of mankind.

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DOSAGE OF SULFADIAZINE IN PNEUMONIA

Because of its greater efficacy and lower toxicity, the consensus of opinion in the United States today is that sulfadiazine is the drug of choice in pneumococcal pneumonia. The usual dosage advocated is 4 or 5 gm. as an initial dose, followed by 1 gm. every four hours. The initial dose varies however from 2 to 7 gm. and a maintenance dose from 1 to 2 gm. every six hours has also been used.

In a study to establish the optimum dosage, Collen and Phillips* compared the results obtained in two series of patients in which all conditions were approximately similar except that one group received the usual doses of sulfadiazine, while the other received double the usual dose. It was realized that the series did not represent cases of equal severity, but the value of the statistics was of value in a general way in indicating success.

In the first group 618 patients with pneumococcal pneumonia were treated from September 1942 through August 1943. Most of these received 4 or 5 gm. of sulfadiazine orally as an initial dose; severely ill patients received an initial dose of 5 gm. of sodium sulfadiazine intravenously plus 2 gm. of sulfadiazine orally. Then 1 gm. of the drug was administered every 4 hours or 2 gm. every 6 hours. The average blood levels varied from 3 to 10 mg. of sulfadiazine per 100 c. c. The mortality in this group was 66 patients or 10.7 per cent.

In the second group of 748 patients treated from September 1943 through April 1944, the same adjuvant therapy and general therapeutics regime was employed. In this series, however, every moderately or severely ill patient received 5 gm. of sodium sulfadiazine intravenously and 5 gm. sulfadiazine orally as an initial dose. Then 4 gm. was given orally every six hours. Sulfa levels in this group ranged from 12 to 20 mg. per 100 c. c. The mortality in this group was 46 patients or 6.2 per cent.

This report showed a decrease of gross fatality rate by 40 per cent with no other change in therapy except doubling of the dose of sulfadiazine.

The 5 gm. of sodium sulfadiazine given intravenously initially was in 500 c. c. of sixth-molar sodium lactate solution (ph 7 to 7.2). Five grams of sodium bicarbonate was administered orally every six hours while sulfadiazine was given. This is thought to be very important in decreasing the frequency of crystalluria and hematuria.

The series in which the double dosage

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*Collen, Morris F., and Phillips, Edward. Arch Int. Med. 75:22-30, 1945.

was employed showed besides the decreased mortality a decrease in the incidence of sterile pleural effusions from 5.2 to 2.7 per cent and a decrease in the average number of days in the hospital required for recovery. There was no greater incidence of drug toxicity with this double dosage. An analysis of both series showed no significant difference in the severity of the pneumonia, the only difference being the use of approximately twice the usual dose of sulfadiazine.

The author concludes that for severely ill adult patients with pneumococcal pneumonia sufficient sulfadiazine should be given to maintain blood levels of at least 15 mg. and an optimum level at about 20 mg. per 100 c. c.

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TOXIC REACTIONS OF SALICYLATE THERAPY

Salicylates, especially aspirin or acetylsalicylic acid, are among the most commonly used drugs by both physicians and laymen. Henry Z. Sable* discusses the pharmacology and toxicity of the drug and remarks on the confusion concerning the amount of the drug that may be administered with safety. Many Canadian workers use 10 gm. or more daily, while many Americans think of 7 gm. a day as a large dose. He does not agree with the statement of Cecil that aspirin is better tolerated by some patients than sodium salicylate.

The toxic symptoms most commonly noted are nausea, vomiting, tinnitus and partial deafness. Increased respiration may occur with prolonged use of sodium salicylate. The basal metabolism is increased by 20 to 25 per cent. Renal damage may occur in intoxication but is said to be not permanent.

It is not thought that the salicylates have any effect on the underlying infectious agent in rheumatic fever nor on the immune responses.

Hypocoagulability of the blood is produced and hemorrhagic manifestations may occur with massive doses. The action is said to be similar but not as intense as that of dicumarol. Sodium bicarbonate is useful in decreasing the increased gastric acidity.

The lethal dose is said to be from 10 to 30 gm. at one dose. He reports only one death in 752 cases of attempted suicide using aspirin in doses from 5 to 95 gm.

o

SELECTION OF ANESTHETICS

It is well understood that the ideal anesthetic has not been found. Ideally, an anesthetic should accomplish its purpose with safety and be free of unpleasant aftereffects. So states George J. Tomas* is discussing the selection of anesthetics and listing the contraindications for the present-day anesthetics.

Ether is stated to be the most extensively used and the most reliable. Its use is contraindicated in acidosis, old age, cataract surgery, respiratory disturbances, atheromatous vessels, increased intracranial pressure and proximity of flame or cautery.

Chloroform is often used in obstetrics but has many contraindications, including diseases of the heart, liver and kidneys, diabetes, anemia and asthenia.

Vinethene may be used for short or light anesthesia by inhalation, when muscular relaxation is unimportant. Acidosis, old age, debility, liver disease, renal insufficiency and the presence of flame or cautery are all contraindications.

Ethyl chloride must be used with caution in short procedures in which muscular relaxation is not necessary. Its contraindications are the same as those for chloroform.

Nitrous oxide does not produce relaxation. Among the contraindications are advanced tuberculosis, heart disease, high metabolic rates, and muscular, athletic or alcoholic individuals.

Ethelyne is more valuable than nitrous oxide and produces better relaxation. It may be combined with oxygen and the only contraindication Thomas lists is flame or cautery about the head or neck.

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*Sable, Henry Z., Canadian Medical Assoc. Journal, 55:153-158, 1945.

*Thomas, George J., Indications and Contraindications for Various Anesthetics. Anest. & Analg. 24:113-118, 1945.

Cyclopropane may be used with a high oxygen concentration and is a suitable anesthetic for chest surgery and other procedures. It has a marked irritating effect on the conduction mechanism of the heart. It is highly explosive unless mixed with helium. It should not be used with epinephrine hydrochloride and is contraindicated in the presence of cardiac disease and cardiac arrhythymias or with the use of flame or cautery about the head or neck.

Rectal anesthesia is unreliable, should not be used for general anesthesia and has several contraindications.

Intravenous pentothal sodium is rapid in action and requires the maintenance of an efficient air-way by a trained anesthetist.

Local analgesia has its usefulness. Idiosyncracies to epinephrine, procaine, cocaine or their derivations are contraindications, as well as inability of patient to cooperate.

Spinal analgesia has many contraindications in spite of its usefulness. These include cardiovascular disease, brain or cord tumor, syphilis. shock, phobias concerning spinal analgesia and others.

Caudal analgesia is useful for perineal, vaginal and rectal procedures.

Refrigeration analgesia reduces the mortality rate in amputations of the extremities, and the patients are comfortable postoperatively.

From this summary of Thomas it appears that ether, ethylene or a combination of ethylene-ether with oxygen is still the most satisfactory and safest anesthetic agent for general use. The choice of the anesthetic agent, however, involves a consideration of the condition of the patient by the internist or the surgeon, or both, and the opinion of the anesthetist and his familiarity and experience with the particular method.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

ABSTRACT OF MINUTES
EXECUTIVE COMMITTEE
AUGUST 25, 1945

The Secretary-Treasurer reported that the present membership of the State Society is 1,483 which is an increase of 22 members over the number at the same time last year.

Recommendation of the Budget and Finance Committee that surplus amount in the savings accounts of the Medical Defense and Indigent Physicians Funds be invested in government securities, was approved. It was also the opinion of the committee that surplus amount in the checking account of the general fund should be similarly invested, amount predicated on balance after expense of advertising campaign is met.

The Congressional Committee submitted a report containing opinion in regard to bills under consideration by Congress at this time. This report, with attached supplemental statement, and also copy of the report of the Committee on Maternal Welfare, submitted to the Executive Committee at this meeting, has been sent to each member of the Society.

The report of the Committee on Cancer contained two recommendations, one concerning appointment of an Executive Committee of the Women's Field Army, and the other in reference to expense of the committee. Upon action of the Executive Committee a special committee has been appointed by the President to consider these recommendations.

A very comprehensive report was submitted by the Committee on Postwar Planning and, in accordance with instructions of the Executive Committee, is printed immediately following these minutes.

The design for the Walter Reed Memorial medal has been completed, the chairman of the committee reported, and five medals have been presented to the doctors who have earned these awards. Special recognition was made of the fact that Dr. Matas prepared the drawings for this medal.

Reports of the following committees were received and filed: Journal, Mental Health, Public Policy and Legislation, and War Participation.

The committee confirmed action taken by mail concerning approval of a survey of hospitals in Louisiana as proposed by the Louisiana Hospital Association.

A communication in which a complaint was made concerning handling of examination of mental cases in the state was presented and motion was made and carried that an interpretation of Act 303, 1944 in reference to this subject be secured from the Attorney General.

A proposed premarital bill for introduction in the next legislature, which has been prepared by the Social Hygiene Association of New Orleans, was presented and was referred to the Committees on Public Policy and Legislation of the State Society and the Orleans Parish Society.

Discussion of the venereal disease clinic at Delgado Memorial in New Orleans, followed presentation of a letter received from the Director of the Louisiana State Board of Health on this subject. The Secretary was requested to communicate with the Director calling attention to the plan approved previously by the State Society and also to the fact that according to the agreement made this and other similar projects should be terminated at the earliest possible time after the war.

The Secretary was appointed as representative of the State Society to attend a meeting of the Northwestern State College, in accordance with an invitation received for such representation.

The subject of newspaper advertising in regard to opposition to the Wagner-Murray-Dingell Bill and similar legislation was discussed. It was the opinion of the committee that such a campaign should be undertaken and that details should be worked out by a special committee. The Councilors were asked to disseminate information to their local societies in regard to having representatives appear before lay organization to speak on such subjects.

A special committee was appointed to meet with Senator Ellender to discuss bills before Congress, when he was in New Orleans in August.

It was decided that the 1946 meeting of the House of Delegates and general body of the Society will be held on April 29, 30, and May 1. Place of meeting will be decided upon at a later date.

REPORT OF THE COMMITTEE ON POSTWAR PLANNING

August 25, 1945.

To the Executive Committee,
Louisiana State Medical Society.
Gentlemen:

The Committe on Postwar Planning of the Louisiana State Medical Society has been rather active since appointment of the committee by our President, Dr. Val H. Fuchs. A report was made in the New Orleans Medical and Surgical Journal, Vol. 97, No. 11, pages 512-514, May, 1945, which presented the actions of the committee up to this time, with some suggestions that were made. Since this time, the committee has contacted all parish societies throughout the state requesting that similar postwar committees, such as established in New Orleans, be appointed in all parish societies.

These committees should have their attention called to the plan as outlined by the Orleans Parish Medical Society, and follow their suggestions or make any improvements that they may so desire to fit each individual organization.

The Association of Commerce Postwar Planning Committee, as well as the President of the New Orleans Association of Building Owners and Managers, has been contacted here in New Orleans with the idea of trying to obtain more office space for the men who are returning. It seems to be one of the most serious problems of the returning veterans. The other matter in which the veteran has been very much interested has been the question of refresher courses and courses in residencies in hospitals throughout the state. So far nothing concrete has been able to be obtained in regard to the residencies, renewal of internships, and the refresher courses. To quote from Dr. H. W. Kostmayer, the following is an excerpt from his letter of August 10 in regard to this matter:

"Postwar planning for continuation study by physicians returning from the war has become something of a nightmare to me. I find myself continually frustrated by a complete lack of knowledge of how many physicians will be released in a given month, and how many of these will desire short courses, longer courses, courses in Medicine, courses in Surgery, or courses in any of the branches of medical practice. It seems to me, therefore, that we can do nothing better than to make plans while we await applications from sufficient numbers to justify the establishment of formal courses."

An excellent review has been obtained from the Bureau of Government Research outlining the needs and conditions of the state in regard to medical locations, prewar conditions, and ideal conditions as suggested by the American Medical Association. This review is attached to this report for the approval of the Executive Committee. We believe that this report should be given more publicity either by being published in the Journal, or by being submitted to the various parish medical societies for their own information. Also, a copy should be placed in the hands of the secretary-treasurer of the State Society for the returning men, in order to obtain locations on their return.

It has been impossible for the committee to see that all these activities are represented in the Orleans Parish Medical Society were carried out throughout the state, since this would require a representative in each one of the parish societies. The committee does not consist of any but local representatives, and, therefore, it has had to depend on the cooperation of the parish societies to further carry out these plans. However, we believe that this should be a primary objective of the State Society for the next six months or more. We believe that these committees, if organized throughout the state, would become active and much good could be accomplished, and that any resentment of the returning veterans towards the men who were not in the Armed Forces could be lessened to a material degree. These men could be made to feel that they are more than welcome, and that the Society is more than glad to cooperate in giving them help in order to get them started again in their former activities.

Respectfully submitted,
E. L. Zander, M. D., Chairman,
Committee on Postwar Planning.

MEMORANDUM ON THE DISTRIBUTION OF PHYSICIANS BY PARISHES FOR THE STATE OF LOUISIANA IN 1944

On the basis of data collected by the Committee on Postwar Planning of the Louisiana Medical Society, the Bureau of Governmental Research, Inc., has drawn up this memorandum and the accompanying maps.* The data supplied by the Committee consists of the number of physicians in each of the parishes in 1944 and an estimated population figure for each parish for 1944. According to Dr. B. I. Burns** the commonly used standard for comparative studies is a ratio of physicians to population of 1:1,000.

Applying this standard to the data for 1944, Map I has been prepared showing graphically the percentage deficiency of physicians in each of the 64 parishes. It will be noted that this deficiency ranges from none for Orleans Parish to 90.9% in West Baton Rouge. More than half the parishes have a deficiency of greater than 50% (See Table I for detail by parishes).

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*Maps attached to original report.

**Burns, B. I.: "The Distribution of Physicians in Louisiana with Special Reference to Those in Private Practice", The Southern Medical Journal, April, 1942, pp. 381-389.

TABLE I

DEFICIENCY OF PHYSICIANS BY PARISHES 1944 ON BASIS OF ONE PHYSICIAN PER 1000 POPULATION

Parish	Et. Pop. 1944	No. of Active Physicians	Ideal No. of Physicians	Deficit of Physicians	% Supply is of Ideal
Acadia	42,490	20	42	22	47.6
Allen	16,631	6	17	11	35.3
Ascension	18,951	11	19	8	57.9
Assumption	17,075	7	17	10	41.2
Avoyelles	34,822	11	35	24	31.4
Beauregard	16,492	5	16	11	31.3
Bienville	18,876	8	19	11	32.1
Bossier	29,914	6	30	24	20.0
Caddo	143,226	137	143	6	95.8
Calcasieu	85,609	50	86	36	58.1
Caldwell	10,145	6	10	4	60.0
Cameron	5,225	3	5	2	60.0
Catahoula	11,933	2	12	10	16.7
Claiborne	24,113	11	24	13	45.8
Concordia	12,909	5	13	8	38.4
DeSoto	24,609	7	25	18	28.0
East Baton Rouge	121,864	83	122	39	68.0
East Carroll	15,054	4	15	11	26.7
East Feliciana	11,852	4	12	8	33.3
Evangeline	30,800	8	31	23	25.8
Franklin	27,992	12	28	16	42.9
Grant	16,000	4	16	12	25.0
Iberia	35,156	12	35	23	34.3
Iberville	24,701	12	25	13	48.0
Jackson	14,149	7	14	7	50.0
Jefferson	72,198	12	72	60	16.7
Jeff Davis	23,733	8	24	16	33.3
Lafayette	44,047	22	44	22	50.0
Lafourche	36,402	15	36	21	41.7
LaSalle	12,697	7	13	6	53.8
Lincoln	19,818	11	20	9	55.0
Livingston	15,750	5	16	11	31.3
Madison	15,236	7	15	8	46.7
Morehouse	25,082	10	25	15	40.0
Natchitoches	35,444	16	35	19	45.7
Orleans	587,674	594	587	0	101.2
Ouachita	60,086	44	60	16	73.3
Plaquemines	10,872	5	11	6	45.4
Pointe Coupee	20,044	5	20	15	25.0
Rapides	99,199	54	99	45	54.5
Red River	12,866	6	13	7	46.2
Richland	24,524	11	25	14	44.0
Sabine	20,408	8	20	12	40.0
St. Bernard	8,052	2	8	6	25.0
St. Charles	12,028	4	12	8	33.3
St. Helena	7,774	2	8	6	25.0
St. James	14,487	5	14	9	35.7
St. John	13,449	5	13	8	38.5
St. Landry	69,805	22	70	48	31.4
St. Martin	23,709	6	24	18	25.0
St. Mary	34,451	13	34	21	38.2
St. Tammany	23,971	13	24	11	54.2
Tangipahoa	42,859	15	42	27	35.7
Tensas	12,685	3	13	10	23.1
Terrebonne	37,628	11	38	27	28.9
Union	17,964	7	17	10	41.2
Vermilion	42,390	12	42	30	28.6
Vernon	30,898	9	31	22	29.0
Washington	33,790	8	34	26	23.5
Webster	35,468	14	35	21	40.0
West Baton Rouge	10,674	1	11	10	9.1
West Carroll	16.298	8	16	8	50.0
West Feliciana	5,653	3	6	3	50.0
Winn	13,829	4	14	10	28.6

TABLE II

CHANGE BY PARISHES IN SUPPLY OF PHYSICIANS IN COMPARISON TO POPULATION FROM 1940 TO 1944

Parish	Est, Jop. 1944	Number of Physicians 1944	1944 Pop. Per Each Physician		% Increase in Pop. Per Physician
Acadia	42,490	20	2,124	1,775	19.7
Allen	16,631	6	2,772	1,754	58.0
Ascension	18,951	11	1,723	1,632	5.6
Assumption	17,075	7	2,439	2,060	18.4
Avoyelles	34,822	11	3,166	2,066	53.2
Beauregard	16,492	5	3,298	2,474	33.3
Bienville	18,876	8	2,360	1,841	28.2
Bossier	29,914	6	4,986	2,210	125.6
Caddo	143,226	137	1,045	939	11.3
Calcasieu	85,069	50	1,712	1,449	18.2
Caldwell	10,145	6	1,691	1,551	9.0
Cameron	5,225	3	1,742	1,801	—3.3
Catahoula	11,933	2	5,967	2,923	104.1
Claiborne	24,113	11	2,192	1,691	29.6
Concordia	12,909	5	2,582	2,080	24.1
DeSoto	24,600	7	3,516	1,988	76.9
East Baton Rouge	121,864	83	1,468	921	59.4
East Carroll	15,054	4	3,764	3,170	18.7
East Feliciana	11,852	4	2,963	2,109	40.5
Evangeline	30,800	8	3,850	2,772	38.9
Franklin	27,992	12	2,333	1,614	44.5
Grant	16,000	4	4,000	2,655	507.
Iberia	35,156	12	2,930	1,359	115.6
Iberville	24,701	12	2,058	1,980	3.9
Jackson	14,149	7	2,021	1,987	1.7
Jefferson	72,198	12	6,017	5,603	7.4
Jeff. Davis	23,733	8	2,967	2,199	34.9
Lafayette	44,047	22	2,002	1,292	55.0
Lafourche	36,402	15	2,427	1,930	25.8
LaSalle	12,697	7	1,814	913	98.7
Lincoln	19,818	11	1,802	1,549	16.3
Livingston	15,750	5	3,150	2,541	24.0
Madison	15,236	7	2,177	1,844	18.1
Morehouse	25,082	10	2,508	1,838	36.5
Natchitoches	35,444	16	2,215	1,952	13.5
Orleans	587,674	594	989	835	18.4
Ouachita	60,086	44	1,366	883	54.7
Plaquemines	10,872	5	2,174	1,366	59.2
Pointe Coupee	20,044	5	4,009	3,000	33.6
Rapides	99,199	54	1,837	1,078	70.4
Red River	12,866	6	2,144	1,985	8.0
Richland	24,524	11	2,229	2,402	—7.2
Sabine	20,408	8	2,551	1,737	46.9
St. Bernard	8,052	2	4,026	7,280	—44.7
St. Charles	12,028	4	3,007	1,760	70.9
St. Helena	7,774	2	3,887	4,721	—17.7
St. James	14,487	5	2,897	2,766	4.7
St. John	13,449	5	2,690	2,109	27.5
St. Landry	69,805	22	3,173	1,986	59.8
St. Martin	23,709	6	3,952	3,770	4.8
St. Mary	34,451	13	2,650	1,747	51.7
St. Tammany	23,971	13	1,844	1,312	40.5
Tangipahoa	42,859	15	2,857	1,486	92.3
Tensas	12,685	3	4,228	1,771	138.7
Terrebonne	37,628	11	3,421	2,760	23.9
Union	17,964	7	2,566	2,094	22.5
Vermilion	42,390	12	3,533	2,097	68.5
Vernon	30,898	9	3,433	2,127	61.4
Washington	33,790	8	4,224	2,152	96.3
Webster	35,468	14	2,533	1,463	73.1
West Baton Rouge	10,674	1	10,674	2.252	374.0
West Carroll	16,298	8	2,037	2,139	—4.8
West Feliciana	5,653	3	1,884	2,930	—35.7
Winn	13,829	4	3,457	2.820	22.6

Map II shows the number of additional physicians needed to bring each parish up to the standard of 1:1,000. Numerically, the greatest deficiencies are in Jefferson, St. Landry, and Rapides Parishes, each of which need 40 or more physicians. Details by parishes are shown in Column 4 of Table I.

Map III shows the percent increase in population per physician during the four years which have intervened since the Burns study in 1940. The greatest percentage increase has occurred in West Baton Rouge Parish. Other marked increases (100% or more) have been in Caddo, Iberia, Catahoula and Tensas Parishes. The significance of these figures lies in the fact that the medical services available to the average resident in these parishes has decreased appreciably during the period. A few parishes show improvement by this yardstick. For example, both West Feliciana and St. Bernard Parishes appear to be better serviced today than four years ago. Details by parishes are contained in Table II.

Due to the fact that rural and urban areas present different patterns each group is discussed separately below.

Urban Areas

Burns' study of the supply of physicians in 1940 showed that the urban areas were better supplied with physicians than the rural areas. It also showed that on the whole physicians were younger in the urban areas than in the rural areas. On this basis it might have been presumed that the urban areas would have lost a greater proportion of physicians to the armed service and that with the rapid increase of population that has gone on in these areas during the war period they would have experienced a marked shortage in physicians. The data for 1944, however, show that this has not happened in the degree which might have been expected and, further, that the picture is quite definitely not uniform for the whole state in this respect.

In the New Orleans, Lake Charles, Shreveport and Monroe areas there has been some decline in the number of physicians in proportion to the population, but this decline has not been very great. In the large area around Alexandria, however, the supply of physicians has by no means kept up with the increase in population and a very notable shortage of physicians is evident. In the Baton Rouge area the situation is about the same, but it does not cover as large a number of parishes as is true in the Alexandria area.

Rural Parishes

In the so-called rural parishes a distinction has to be made between those that are adjacent to large urban centers and those which are remote from urban centers. With the development of automobile and bus services there has been a marked tendency for rural people to go to cities for their medical services just as they have gone to cities increasingly to buy goods. Thus, some parishes such as Bossier and Jefferson showed a big deficiency in physicians, but probably are fairly adequately serviced by the physicians in Shreveport and New Orleans. The general situation of such parishes has been described in the section above in which we dealt with the various urban areas.

In those strictly rural parishes not closely connected to a city, the picture is very uneven. Most of them have a marked shortage of physicians and Burns' study of 1940 showed that most of the physicians in these rural parishes were quite old. It also showed that few new physicians had gone into these parishes for a number of years. It probably can be presumed that few, if any, additional physicians have gone into such parishes during the war period. At the same time the war situation and the shortage of physicians may have caused some of these old physicians to defer their retirement. Along with this, there has been a considerable amount of shifting of population in rural areas as a result of the heavy flow of rural workers to war time manufacturing centers. Therefore, the supply of physicians in these parishes has been largely a matter of a change in the population balanced against the rate of retirement of the physicians who were there in 1940, and the change in population per physician in 1944 as compared with 1940 shows this to be a very irregular picture.

In some of the rural parishes there were fewer people per physician in 1944 than in 1940. In others, there were approximately twice as many people per physician in 1944 as in 1940. The shortage existing in 1940, the low rate of entrance of new physicians into these areas during the war, and the relatively advanced age of physicians in rural parishes even in 1940, all indicate that there will be a critical shortage in the next few years with the death or retirement of present physicians.

Report prepared by Bureau of Governmental Research, Inc., August 4, 1945.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR OF MEETINGS

October 15. Hotel Dieu Staff, 8 p. m.
October 16. Charity Hospital Medical Staff, 8 p. m.
October 17. The Orleans Society of X-Ray Technicians, 7:30 p. m.
Charity Hospital Staff, 8 p. m.
October 19. I. C. R. R. Hospital Staff, 12:30 p. m.
October 23. Baptist Hospital Staff, 8 p. m.
October 24. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
Catholic Physicians' Guild, 8 p. m.
French Hospital Staff, 8 p. m.
October 25. Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.
DePaul Sanitarium Staff, 8 p. m.
October 26. L. S. U. Faculty Club, 8 p. m.
New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.
November 5. Board of Directors, Orleans Parish Medical Society, 8 p. m.
November 6. Eye, Ear, Nose and Throat Staff, 8 p. m.
November 7. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
Mercy Hospital Staff, 8 p. m.
November 8. Clinico - pathologic Conference, Touro Infirmary, 12:00 noon.
November 12. Scientific meeting, Orleans Parish Medical Society, 8 p. m.
November 14. Woman's Auxiliary, Orleans Club, 3 p. m.
Touro Infirmary Staff, 8 p. m.
November 18. I. C. R. R. Hospital Staff, 12:30 p. m.

NEWS ITEMS

On August 15, Dr. Paul G. Lacroix resigned as treasurer of the Society because of ill health. In accordance with the By-Laws of the Society, it is the duty of the president, with the approval of the Board of Directors, to fill all vacancies in the Board of Directors, except that of president-elect. At the recent meeting of the Board of Directors of the Society Dr. Boni J. DeLaureal was elected as treasurer.

Dr. Vincent J. Derbes was recently certified by the American Board of Internal Medicine as a specialist in internal medicine and allergy.

Comdr. John F. Oakley recently received the Navy and Marine Corps Medal for heroism in action against the enemy on Saipan and Tinian during which, on several occasions, he continued to operate in an unprotected surgery despite fire and air raid alerts, after ordering other patients removed to places of relative safety.

Dr. Carl H. Rabin has returned from military service, and is now actively engaged in the practice of medicine at 624 Maison Blanche Bldg.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of very month	Monroe

Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

STATE MEETING TO BE HELD IN APRIL 1946

At the meeting of the Executive Committee of the State Medical Society held Saturday, August 25, it was decided to hold the annual state meeting on April 29, 30, and May 1, the place of meeting to be decided upon later. The details of the Executive Committee meeting will be published next month.

SOUTHERN MEDICAL ASSOCIATION

The 1945 meeting of the Southern Medical Association will be held in Cincinnati, Ohio, November 12-15. Hotel reservatiens may be secured by communicating with Dr. Robert L. Biltz, Chairman of the Hotel Committee, 910 Dixie Terminal Building, Cincinnati 2, Ohio.

POSTGRADUATE COURSE IN ALLERGY

The American College of Allergists offers an intensive, practical course in allergy for 5½ days, November 5 to 10, inclusive, at Thorne Hall, Northwestern University, Superior and Lakeshore Drive, Chicago, Illinois. Men in the service will be admitted free of charge, and for others the registration fee is $100.

Inquiries should be addressed to the Secretary of the American College of Allergists, 401 La Salle Medical Building, Minneapolis 2, Minnesota.

SOUTHERN BAPTIST HOSPITAL

The regular meeting of the Clinical Staff of the Hospital was held on September 25. The program consisted of a case not reported entitled "Sudden Death in a Diabetic" presented by Dr. Davis Haughton. Dr. H. L. Kearney reported on a patient with a cyst of the maxilla. The last feature of the scientific program was the death report in which Dr. Philip M. Tiller, Jr., discussed a case of a patient who had died as result of coronary occlusion.

COMMITTEE ASSIGNMENTS OF LOUISIANA CONGRESSMEN

The Journal is in receipt of the Committee Assignments of the Louisiana Congressmen sent to it by the Council on Medical Service and Public Relations of the American Medical Association. This is published for the information of the members of the Louisiana State Medical Society.

Senators

JOHN H. OVERTON—Manufactures, Chairman; Appropriations, Commerce, Irrigation and Reclamation.

ALLEN J. ELLENDER—Claims, Chairman; Agriculture and Labor, Naval Affairs, Post Offices and Post Roads, Territories and Insular Affairs; Special: Study and Survey Problems of Small Business Enterprises.

Representatives

1. F. EDWARD HEBERT—District of Columbia, Naval Affairs.
2. PAUL H. MAHONEY—Ways and Means.
3. JAMES DOMENGEAUX—Elections No. 1, Chairman; Insular Affairs, Irrigation and Reclamation, Merchant Marine and Fisheries, World War Veterans' Legislation.
4. OVERTON BROOKS — Military Affairs; Select: Post-War Military Policy.
5. CHARLES E. McKENZIE—Post Office and Post Roads.
6. JAMES H. MORRISON—Civil Service, Invalid Pensions, Labor, Public Buildings and Grounds, Roads.
7. HENRY D. LARCADE, JR. — Education, Flood Control, Patents, Pensions, Rivers and Harbors, Territories.
8. A. LEONARD ALLEN—Census, Chairman; Elections No. 2, Flood Control, Immigration and Naturalization, Pensions, World War Veterans' Legislation.

SMITH HONORED

A testimonial dinner was given to Dr. Wilbur C. Smith at the Roosevelt Hotel on the evening of Thursday, September 6. The dinner was organized by Dr. Spencer B. McNair. Dr. Emmett Irwin acted as toastmaster and the following speakers lauded Dr. Smith and his taking over the duties of Dean of the Louisiana State University Medical School. These speakers were: Dr. W. B. Hatcher, President, Louisiana State University; Dr. Frank R. Gomila, Commissioner Public Safety; Mr. John Y. Fauntleroy, member of the Louisiana State University Board of Supervisors; Dr. Hiram W. Kostmayer, Dean of the Tulane University Medical School; Dr. Val H. Fuchs, President of the Louisiana State Medical Society; Dr. P. H. Jones, Jr., President of the Orleans Parish Medical Society, and Brother Peter, Catholic High School of Baton Rouge. The invocation was delivered by the Very Rev. Thomas J. Shields, S. J.

Dr. Smith responded in a short and clever speech in which he urged the cooperation of every one connected with the school.

COLONEL WALTER C. ROYALS, M. C., HONORED

A reception for Colonel Walter C. Royals and other members of the 24th General Hospital was held on Tuesday, September 25, at 5 p. m. There was a large attendance at the reception, including the members of the Board of Administrators, the Deans of the various schools of the University, faculty and staff of the School of Medicine, Senior medical students and friends of the doctors who have served in the Unit. Dr. Rudolph Matas, who organized Base Hospital #24 during World War I, was also present.

Colonel Royals has been commanding officer of the 24th General Hospital sponsored by Tulane University, which has been overseas for two years, spending some months in Africa and then being transferred to Italy. Last winter the Unit was awarded the Fifth Army Plaque. The citation accompanying the award, signed by Lt. Gen. Mark W. Clark, Fifth Army Group Commander, read as follows:

"This organization provided superior medical attention to thousands of Fifth Army troops. The 24th General Hospital maintained highest standards of professional treatment despite heavy emergency demands which were made repeatedly. The noteworthy accomplishments of this hospital reflect the high traditions of the Medical Corps of the United States Army."

President Harris introduced Colonel Royals, who then presented the citation and plaque to the University. They were officially accepted by Dr. Hiram W. Kostmayer, Dean of the School of Medicine, in the name of the faculty of the School of Medicine of Tulane University.

AMERICAN MEDICAL ASSOCIATION

A meeting of the House of Delegates of the A. M. A. will be held in Chicago at the Palmer House, December 3-6, 1945.

RELEASE OF DOCTORS FROM SERVICE

Demand swells from medical organizations, press, business, labor, Congress, from the doctors themselves in uniform and above all from thousands who anxiously await the return of their own family doctor, *for the release* of the greatest number possible of the *doctors in service.*

Very definite *official* word should be forthcoming soon from Army and Navy authorities as to *how many, how soon* and on *what basis* doctors are to be released. Newspapers report that 13,000 to 18,000 doctors now in the Army are to be out by the end of the year, and 30,000 by July 1, 1946. *That's really good news!*

MEDICAL SOCIETIES FACE TASK

Faced with problems increasing daily, almost hourly in number and importance, the Council on Medical Service and Public Relations appeals to each and every county medical society to do everything possible to *hold regular meetings* and maintain an *active organization* during the coming year.

It is hoped that those county societies which have been discontinued regular meetings during the war will return now to their regular pre-war schedule.

This will be *doubly difficult* in many cases due to the fact that individual physicians are so busy and so pressed for time. Despite the working hours faced by every physician in his private practice *each must sacrifice* a substantial part of his time and effort for medical organization work if the medical profession is to continue to lead in giving the American public the high standard of medical care in the future as in the past.

URGE RETURN OF QUESTIONNAIRE

Each of the 108,000 civilian physicians in the country has received a letter and a questionnaire from the *A. M. A. Bureau of Information.* It is most important that each individual doctor complete and return these questionnaires in order to bring current records at the A. M. A. Headquarters up to date and in order to obtain actual facts in regard to the *true distribution of medical care.* Lt. Col. Robert D. Bickel in charge of the Bureau of Information reports that early returns from the questionnaire have been coming in rapidly.

DOCTOR NEEDED

A doctor is needed in Iberia Parish to take over the practice of medicine in two industrial plants. Outside practice is permitted, with a basic salary of $385.00 per month for treating employees. There is free office space, fully equipped; also one nurse for an assistant, and a nice home furnished for $25.00 per month. Anyone interested should get in touch with the office of the Journal, 1430 Tulane Avenue, New Orleans 13.

PROFESSIONAL TRAINING PLANNED FOR ARMY DOCTORS

In order to provide qualified doctors for the peace time, Army plans have been formulated to interest Medical Corps officers who are serving for the duration of the war to apply for commission in the Regular Army, Major General Norman T. Kirk, Surgeon General of the Army, announced recently.

Among the more important attractions which will be offered Medical Corps officers who remain in the Army are the following:

1. The Regular Army Medical Corps officer will be assured a professional career offering broader possibilities in a larger field than the practice of the average civilian doctor affords.
2. The training and the assignments of Army

doctors will be arranged to aid the Army doctors in obtaining board certification for specialties from the recognized civilian specialty boards.

3. Graduate training will be continued with the establishment of Army fellowships, residencies and special courses.

In addition to the above attractions, which carry decided weight with any professional man, the Army affords security in its pension system, hospitalization care and other considerations not usually available in civilian practice, General Kirk said.

The plans under this policy call for the establishment of graduate training programs at Army Installations where the residencies will meet the requirements of specialty boards and arrangements will be made for accrediting by the appropriate specialty boards, Colonel Wergeland said. Another phase of the program includes the etsablishment of Army internships at selected Army general hospitals.

Plans outline a procedure for giving professional rehabilitation and specialized training to Regular Army Medical Corps officers who have been in administrative work during the war. These doctors who have not been able to engage in practice because of administrative responsibilities will serve as understudies with doctors who have been active in professional practice. This assignment will lead to continued professional service and eventually specialty board certification.

Medical Corps officers in the Regular Army will be kept in professional capacities without material interruption under this plan.

The advantages of a professional career in the Army will also be brought to the attention of medical students to interest them in an Army commission. Only those who stand scholastically in the upper third of their classes will be prevailed upon to consider the Army for a career.

Civilian physicians and former Organized Reserve Corps and AUS officers now on inactive duty status may submit Statement of Interest direct to the Adjutant General's Office.

DR. FRANCIS G. BLAKE AND DR. KENNETH F. MAXCY GET TYPHUS AWARD

The United States of America Typhus Commission Medal was awarded at the Office of The Surgeon General, Monday, September 10, to Dr. Francis G. Blake, Dean of Yale University School of Medicine, and Dr. Kenneth F. Maxcy, Professor of Epidemiology at Johns Hopkins School of Hygiene and Public Health, for "exceptionally meritorious service." Both Dr. Blake and Dr. Maxcy, in addition to their other duties, are consultants to the Secretary of War.

The awards were presented by Major General Norman T. Kirk, Surgeon General of the Army. The citation accompanying the award to Dr. Blake said in part: "Dr. Blake initiated and directed investigations of classical importance on the clinical features and prevention of scrub typhus. He made new contributions to the knowledge and control of a farm of typhus fever of great military and civilian importance. His wisdom, energy, and special competence assured the success of this mission and laid the basis for enduring benefits."

Dr. Maxcy was commended for "his observations made in the field under difficult campaign conditions, which clarified earlier knowledge of the conditions under which this disease occurs and added greatly to information about the special conditions which were making this disease a health hazard of paramount importance to American troops."

The Typhus Commission medal, which was authorized by President Roosevelt, is regarded as a high honor in this field of science. Only about thirty men have been awarded it to date.

SURGEON GENERAL ANNOUNCES NEW OFFICER RELEASE POLICY

A revised point system program which will return 13,000 physicians, 25,000 nurses, 3,500 dentists and an undetermined number of other Medical Department officers to civilian life by January 1, 1946, was announced September 14, 1945, by Major General Norman T. Kirk, The Surgeon General.

Under the plan those Medical Corps officers who have 80 points, are 48 years of age or have been in the Army since before Pearl Harbor will be released as surplus officers unless they are specialists in eye, ear, nose and throat work; plastic surgery, orthopedic surgery, neuropsychiatry or are laboratory technicians. These specialists will be released if they were called to active duty prior to January 1, 1941.

This is a drastic lowering of points below the previous plan which was based on an adjusted service score of 100 for non-scarce Medical Corps officers and 120 for those in scarce categories.

HONORARY DEGREE TO COLONEL JONES

Western Reserve University, Cleveland, Ohio, has conferred upon Colonel Harold W. Jones, Director of the Army Medical Library, the degree of Doctor of Laws on July 13, 1945. This degree is in recognition of the work Colonel Jones has done in developing the Library.

Colonel Jones, born at Cambridge, Massachusetts, attended the Massachusetts Institute of Technology from 1894 to 1897. He then entered Harvard Medical School from which he received his medical degree in 1901. He was an honor graduate from the Army Medical School in 1906, and was graduated from the Army Medical Field School in 1930.

LEGION OF MERIT

TO: Brigadier General Charles C. Hillman, United States Army, of Almyra, Arkansas. For service from August, 1939, to August, 1944. As Chief of the Professional Service, Office of The Surgeon General, by his untiring effort and devotion to duty he was responsible for the development of this Service from a small pre-war division to a large, well-balanced organization. Under his direction, physical standards were set up for the war-time Army, and professional direction was given to the blood plasma program and many other technical procedures which have been highly successful in the war effort.

NEW LIBRARIAN FOR THE ARMY MEDICAL LIBRARY

Willis E. Wright assumed his new duties as Librarian of the Army Medical Library on July 1, 1945. He will be assisted by Miss M. Ruth MacDonald, formerly Head Cataloger of the Detroit Public Library, who is Head of the newly organized Catalog Division and her assistant, Miss Irene Jones. Scott Adams has been named as Chief of the Acquisition Division.

Authorization has been received for thirty-one additional staff members for the Library. This brings the total authorized personnel strength to 156 including six military and one hundred fifty civilian employees. Eighteen members of this total are at present assigned to the Cleveland Branch of the Library.

NEWS ITEM

Dr. James Watt, U. S. Quarantine Station, New Orleans, Louisiana, a major in the U. S. Public Health Service (Reg.), recently arrived in Chungking on a mission for the United Nations Relief & Rehabilitation Administration to work with a special Chinese emergency medical program. Dr. Watt was detailed to UNRRA by the Public Health Service in July of this year.

EXAMINATIONS
AMERICAN BOARD OF OBSTETRICS AND GENECOLOGY

Office of the Secretary
1015 Highland Building, Pittsburgh (6), Penn.

The next written examination and review of case histories (Part I) for all candidates will be held in various cities of the United States and Canada on Saturday, February 2, 1946, at 2:00 P. M. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year. All applications must be in the office of the Secretary by November 1, 1945.

INFECTIOUS DISEASES IN LOUISIANA

The weekly morbidity report for the week ending July 28 listed 11 cases of pulmonary tuberculosis, which was the only disease with more than ten cases reported. There were reported three cases of diptheria, one in Caddo, one in Terrebonne and one in Washington Parish. Three cases of malaria, one in Jefferson, one in Tangipahoa and one in Vernon Parish were reported and one was reported which occurred out of the state. Three parishes, Lafayette, Orleans and W. Baton Rouge, each reported one case of meningococcus meningitis and one such case was reported from out of the state. Poliomyelitis cases occurred in Acadia and Caddo Parishes; one in the former and five in the latter. One case of scarlet fever was reported from Jefferson Parish; one case of typhoid fever from Jackson and Lincoln parishes; one case of whooping cough from Orleans and five cases of typhus fever were reported from four parishes in the state. The report for the week ending August 4 included report of venereal disease cases, showing 1768 cases of gonorrhea and 1374 cases of syphilis. There were 25 cases of chancroid reported and 16 cases of lymphapathia venereum. Other diseases reported in numbers greater than ten were as follows: 175 cases of pulmonary tuberculosis, 147 of unclassified pneumonia, 126 of cancer, 72 of malaria, 55 of septic sore throat, 39 of whooping cough, 35 of bacillary dysentery, 31 of rheumatic fever, 30 of pneumococcic pneumonia, 27 of granuloma inguinale, 23 each of measles and typhus fever, 21 of typhoid fever, 18 of scarlet fever, 17 of diptheria, and 13 of tuberculosis of other form than pulmonary. Of the 72 cases of malaria reported, 52 cases were contracted within the Continental United States, 10 outside of the Continental Unied States and place of contraction of 10 cases was not stated. Six meningococcus meningitis cases were reported; one in Assumption Parish and five in Orleans. St. James and Orleans Parish each reported one case of poliomyelitis and Caddo reported two cases of this disease. The report for the next week, ending August 11, listed 61 cases of pulmonary tuberculosis, 56 of influenza, 44 of malaria (27 within Continental United States and 17 outside), 35 of whooping cough, 12 of typhus fever, and 11 of unclassified pneumonia. There were two cases of poliomyelitis reported; one from Bossier and one from Madison Parish. The 35 cases of whooping cough which were reported occurred in St. James Parish. For the week which terminated August 18 the most frequently reported diseases included the following: 46 cases of pulmonary tuberculosis, 45 of malaria (36 within Continental United States, 7 outside and 2 where place of contraction was unknown), 27 of septic sore throat, 19 of typhus fever and 11 of unclassified pneumonia. Meningococcus meningitis was reported, one case each, by Jefferson and Orleans parishes. Two cases of poliomyelitis occurred in Bienville Parish, and Bossier, Caddo, St. Landry and St. Mary, each reported one. Thirty-nine cases of pulmonary tuberculosis were reported for the week ending August 25, as well as 18 of unclassified pneumonia, 16 each of influenza and typhus fever and 14 of malaria. Seven of the cases of malaria occurred within Continental United States, six outside and place of contraction of one was not stated. Rapides Parish reported one case of meningococcus and poliomyelitis was reported by Bienville, Caddo and Madison parishes; the first reporting two cases and the other parishes reporting one each.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported that for the week which closed August 11 there were listed 134 deaths in the City of New Orleans of which 80 were white, 54 colored and 12 under one year of age, divided equally between white and colored. There was a decrease in the number of deaths which occurred during the week which ended August 18, the report showing 74 deaths in the white population and 33 in the colored, making a total of 107. Fifteen of these deaths were children under one year of age; nine white and six colored. For the week ending August 25 there were 28 more deaths reported than for the previous week, 77 of which were white and 58 colored and 15 were under one year of age; four white and 11 colored. The total number of deaths reported for the week ending September 1 was 139, divided 97 white and 42 colored, including a total of 13 infants, 12 of whom were white children. The report for September 8 showed a still greater increase in number of deaths, 97 white and 49 colored, making a total of 146. Of this number 13 were white children under one year of age and 11 were negro children. There was a decrease of 26 deaths in the city during the week which ended September 15, a total of 120, with 80 occurring in the white population and 40 in the negro. Only three deaths were reported in children under one year of age; one white and two colored.

MONTHLY STATISTICAL REPORT
AUGUST, 1945

Estimated Population as of July 1, 1944

White	391,000	
Colored	169,000	
Total	560,000	
Total deaths, all causes		574
White	363	
Colored	211	
Resident deaths, all causes		574
White	289	
Colored	167	

DEATH RATES

(Per 1000 per annum for the month)

	All Deaths	Non-Residents excluded
White	11.1	08.9
Colored	14.9	11.8
Total	12.3	09.8

Total births recorded		1,282
White	833	
Colored	449	
Resident births		984
White	642	
Colored	342	

BIRTH RATES

(Per 1000 per annum for the month)

	All Births	Non-Residents excluded
White	25.6	19.7
Colored	31.3	24.3
Total	27.5	21.1

THE ABC OF PENICILLIN

While I (Sir Alexander Fleming) was in America I saw most of the laboratories which are producing penicillin on a vast scale. I have said laboratories but perhaps factories is a better word, for penicillin production has become a factory proposition, and it is perfectly extraordinary to see what has developed from a simple laboratory observation made here in London, an observation made with no more complicated appartus than can be found in any hospital's bacteriological laboratory.

Penicillin used to be made by growing the mold on the surface of fluid on milk bottles, and some of it is still so made. Dealing with thousands of bottles every day involved too much labor, so a method was devised for growing it in large tanks, and this is being adopted universally. The largest tank in use contains 15,000 gallons. It is difficult for the ordinary man to imagine just how big a 15,000 gallon tank is. By my arithmatic it is equal to the content of 90,000 whiskey bottles. But who in these days can imagine 90,000 whiskey bottles? (British Information Service).

WOMAN'S AUXILIARY

Following are the officers of the Woman's Auxiliary to the Louisiana State Medical Society for 1945-46:

Officers

President—Mrs. Paul G. Lacroix, 3132 State Street Drive, New Orleans.

President-elect—Mrs. Arthur Long, 1367 Steele Drive, Baton Rouge.

First Vice-President—Mrs. Carroll Gelbke, 44 Willow Drive, Gretna.

Second Vice-President—Mrs. O. B. Owens, 1931 Military Highway, Pineville.

Third Vice-President—Mrs. B. C. Garrett, 4700 Fairfield Ave., Shreveport.

Fourth Vice-President—Mrs. A. G. McHenry, 1810 Riverside Drive, Monroe.

Treasurer—Mrs. Richard Vincent—1441 Eleonore Street, New Orleans.

Recording Secretary—Mrs. Frank Jones, 810 Park Blvd., Baton Rouge.

Corresponding Secretary—Mrs. Willard Wirth, 402 Vincent Avenue, New Orleans.

Chairmen of Standing Committees

Archives—Mrs. Ansel Caine, 5301 St. Charles Avenue, New Orleans.

Bulletin—Mrs. Earl Clayton, Norco.

Cancer Control—Mrs. Herman B. Gessner, 119 Audubon Blvd., New Orleans.

Doctor's Day—Mrs. Geo. J. Taquino, 18 Fontainbleau Drive, New Orleans.

Finance—Mrs. Donovan C. Browne, 4920 St. Charles Ave., New Orleans.

Historian—Mrs. John S. Dunn, 8410 Pontchartrain Blvd., New Orleans.

Hygeia—Mrs. Leo. J. Kerne, Thibodaux.

Indigent Widow's Fund—Mrs. Aynaud Hebert, 2013 Napoleon Ave., New Orleans.

Legislation—Mrs. C. Grenes Cole, 4938 St. Charles Ave., New Orleans.

Organization—Mrs. Arthur Long, 1367 Steele Drive, Baton Rouge.

Parliamentarian—Mrs. A. A. Herold, 1116 Louisiana Ave., Shreveport.

Press and Publicity—Mrs. Roy Carl Young, Covington.

Printing—Mrs. Daniel J. Murphy, 127 South Solomon Street, New Orleans.

Program—Mrs. J. E. Heard, 512 McCormick Street, Shreveport.

Public Relations—Mrs. Rhodes Spedale, 701 Eden Street, Plaquemine.

Red Cross—Mrs. William Kohlmann, 1330 Eleonore Street, New Orleans.

Revision of By-Laws—Mrs. J. Kelly Stone, 72 Fontainbleau Drive, New Orleans.

War Participation—Mrs. Clarence Erickson, 423 Herndon Ave., Shreveport.

Councilors

First District—Mrs. Jules Myron Davidson, 100 Fontainbleau Drive, New Orleans.

Second District—Mrs. Roy B. Harrison, 2327 Napoleon Ave., New Orleans.

Third District—Mrs. Jules E. Dupuy, New Iberia.

Fourth District—Mrs. William J. Sandidge, 522 Stephenson Street, Shreveport.

Fifth District—Mrs. DeWitt T. Milam, 1704 Island Drive, Monroe.

Sixth District—Mrs. Marquis C. Wiginton, Hammond.

Seventh District—Mrs. Olin Moss, 2011 Shell Beach Drive, Lake Charles.

Eighth District—Mrs. Hiram O. Barker, Horseshoe Drive, Alexandria.

Advisory Board

Dr. W. R. Metz, Chairman, New Orleans; Dr. King Rand, Alexandria; Dr. Rhodes Spedale, Plaquemine.

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BOOK REVIEWS

Pulmonary Tuberculosis in the Adult; Its Fundamental Aspects: By Max Pinner, M. D., Springfield, Ill. C. C. Thomas, 1945. pp. 579. Price, $7.50.

The author of this important and useful book states in his preface: "The primary aim of this book is not to impart knowledge but to create understanding, to form rational and consistent attitudes and approaches to the problem as a whole, to provide the basically necessary foundations on which, in my opinion, the practical work should proceed." This aim has been achieved in a brilliant synthesis of present day knowledge of the pathogenesis, pathology, bacteriology, pathologic physiology and epidemiology of pulmonary tuberculosis as applied in treating the patient and in controlling the disease. It is not a textbook or primarily a reference work but a book to read and to use in reevaluating methods. The discussions of incipient, asymptomatic pulmonary tuberculosis, tracheobronchitis, collapse therapy, medical treatment and results of treatment are excellent. The text is pervaded by the informed and healthy skepticism of the scientist. Although it represents, as admitted, the personal opinions of the author on some controversial subjects, the reader is provided with a possible corrective in the form of the unique bibliographic arrangement. The references both at the ends of the chapters and in the general bibliography are not only carefully selected from the medical literature of the whole civilized world between 1882 and 1945, but they are also accompanied by succinct reviews of the content of each book or article. This enables the reader to obtain a much wider view of the problems in tuberculosis than any text short of an encyclopedia could give. There are author and subject indices. The readability of the book is enhanced by a style of writing and a vocabulary far superior to that in the average medical work. The illustrations are excellent within the limitations of reproduction of any roentgenograms and furnish a correlation of roentgenologic and pathologic findings whenever possible. Occasional slips in the proof reading both in the text and in the spelling of proper names may perhaps be explained by war time difficulties in publishing. Dr. Pinner's book should be studied by everyone engaged in treating pulmonary tuberculosis and it can be read profitably by medical students, pathologists, pediatricians, thoracic surgeons, and those teaching or working in public health.

J. L. Wilson, *M. D.*

Penicillin and Other Antibiotic Agents: By Wallace E. Herrell. Philadelphia, W. B. Saunders Company, 1945. xv + 348 pp. Price, $5.00.

This book is a review of the present laboratory and clinical knowledge of penicillin by one of the pioneers in its use in this country. A history of the discovery and development of this substance is followed by extensive discussion of production methods. The chapter on physical and chemical properties is limited due to war time secrecy on advances concerning the chemical structure of the molecule. The antibacterial effects against many organisms in cultures, laboratory animals and patients are fully discussed. The absorption, distribution in the body, excretion and methods for determining the concentrations in solutions or body fluids are fully covered. The clinical sections on administration and effectiveness are well done.

The information on other antibiotic agents, such as tyrothricin, streptothricin, and streptomycin, is less complete due to the smaller amount of research published on these substances.

This book is comparable to the similar one recently written by Kolmer, "Penicillin Therapy" (Appleton Century Co., 1945) as to content and merit.

FOSTER N. MARTIN, JR.

Constitution and Disease: Applied Constitutional Pathologys By Julius Bauer, M. D. New York, Grune & Stratton, 1945, 2d ed. pp. xv + 247, figs. 4. Price, $4.00.

The favorable reception accorded this work is evidenced by its appearance in a second edition so shortly following the first (1942) and by publication of Portuguese and Spanish translations (1943). Previous contributions by the author, extending through a period of some thirty years, have made him a familiar and respected figure in the area covered by this provocative little volume. By virtue of long and intimate association with constitutional medicine Dr. Bauer is exceptionally qualified as author of a book which aims "to familiarize the reader with the principles of 'constitutional thinking' at the patient's bedside." It is a sad comment on present-day teaching in medical schools that a volume of this character should have to be "considered as a supplement to the routine medical curriculum."

Dr. Bauer takes the position, as he has before, that the constitution of the individual is the sum total of the genetic, or inherited, traits alone. Most other students in the field define constitution more broadly, to apply to the resultant of both gentic and environmental factors. The latter would appear to be the more expedient working definition, inasmuch as difficulties so often arise in distinguishing the relative shares of inheritance and environment in the production of specific qualities of the individual. All this is merely a matter of definition, of course, for Dr. Bauer emphasizes the importance of various environmental factors on the reaction capacities of man to disease.

The main themes of the book are individualization of the patient, consideration of the individual as a totality with respect to both bodily and mental characteristics, and the genetic basis of biologic inferiority. The first chapter considers individual variability and conceptions of the normal and abnormal. There follow two chapters giving a general treatment of constitutional pathology, two of them an over-all survey and the other a presentation of instances of inferiority in specific organs and systems. Two chapters are devoted to the "integrative systems of individual constitution"—the endocrine glands and the nervous system. There is a chapter treating types of normal and abnormal constitution: endocrine types, the asthenic constitution, arthritism, and so on. Next follows a discussion of some diseases having chiefly constitutional etiology: diabetes mellitus, obesity, essential hypertension, several disorders of the hemopoietic system, peptic ulcer, cancer. The concluding chapter deals with treatment of constitutional disease. There is an extensive bibliography, arranged by chapters.

This book is a welcome addition to the literature on constitutional medicine. It will promote fruitful thinking in a still too neglected territory.

HAROLD CUMMINGS, PH.D.

Minor Surgery: Edited by Humphry Rolleston and Alan Moncrieff. New York, Philosophical Library, 1994. Pp. 174. Price, $5.00.

In this small book one may review in a very short time a large number of the most common problems encountered in practice. The concise discussions are unusually clear, and there is no needless repetition or unnecessary long quotation from the literature; each chapter is written by a different author and thus the text is very practical. An interesting contrast in British and American methods is seen, and some of the treatments given are not seen in American literature.

GENE FARTHING, M. D.

Endicrinology of Woman: By E. C. Hamblen, B. S., M. D., F. A. C. S. Springfield, Ill., Chas. C. Thomas Co., 1945. Pp. 571. Price, $10.50.

This is a new edition of Hamblen's evcellent book, which previously appeared in 1939. It would be more correct to say that this is an entirely new book, since the author has completely changed his plan of presentation of material, has brought the material in the book up to date, and has greatly improved what was already an excellent book. The arrangement of the contents of this volume is far better than that of the previous one, and the material is more accessible to the reader, both in its organization and in its indexing. This book has excellent and numerous illustrations and photomicrographs, which are very well chosen. One is particularly impressed by the valuable correlation of the ovarian and endometrial findings, which are illustrated side by side. Despite the highly technical nature of much of the material, his book is very readable and contains a tremendous amount of excellent, well selected and correlated data. The topography is excellent.

The subject matter is presented under five chief subdivisions. The first of these deals with the history, embryology, anomalies, anatomy, physiology, chemistry and interrelations of the various endocrine glands. This is a rather brief but adequate presentation.

The second section is devoted to applied endocrine physicology, and includes a discussion of the endocrine physilology of the fetus and newborn, childhood and adolescence. There is a very excellent review of the endocrine physilogy of menstruation of pregnancy, and of the climacteric. The material container herein is well organized and capably presented.

The third section is probably the most valuable one in the book, and brings together the many endocrine diagnostic methods, which one frequently seeks in vain, and finds only with much labor, in the literature. The various laboratory tests utilized in the diagnosis of endocrine problems are presented and discussed together with such clinical procedures, as endometrial biopsy and vaginal smear studies. The particular value of this chapter can only be realized when one has endeavored to track down a given method of laboratory determination in regard to endocrine assays of various types, and has realized the difficulty of obtaining the desired information in a convenient and readily obtainable form. Hamblen expresses some doubt as to the clinical value of the vaginal smear methods and studies. This is an opinion which is held by a large number of reputable men in the field, despite the constant use of this method by probably an equally large group of clinicians, who feel that it is of definite value. Vaginal smear studies have a very definite place in the endocriniologic workup of a patient, and this reviewer does not feel that they should be abandoned. It is probable that with future study and more correct interpretation and evaluation of the findings, rather than discarding the smear method, we will find that it is a method of considerable value and should be utilized more frequently rather than less so.

The fourth portion of the book deals with functional disorders of the endocrine gland, including some that are not related to the gynecologic field directly. This serves as an important review for the gynecologist, who tends to become too myopic, stressing the pelvic dysfunction and forgetting that he is dealing with an intergrated physiology of which the pelvic viscera are a mere portion. There is no doubt that the gynecologic endocrinologist must be increasingly aware of the interrelation of the endocrines, and of the part played by general body physiology in the maintenance of the normalcy of the gynecologic endocrine system.

The last section of the book deals with endocrinology applied to gynecologic diseases, and includes a discussion of the therapy of functional disorders. This section is particularly valuable since it includes much of the material which Hamblen and his co-workers have contributed so brilliantly to this field during the past few years. It would be impossible for any one endocrinologist to outline endocrine therapy in functioal disorders, which would meet with approval of all of the men in the field. Likewise it would be impossible to find an endocrinologist whose whole rationale of therapy in all types of functional disorders would meet with the approval of any one individual in the field. It is probably equally true, that every honest endocrinologist admits that much of the therapy which he prescribes does not meet with his own approval, but is being given empirically, with the idea of later critical clinical evaluation in mind. This reviewer fully cognizant of the foregoing must take issue with some of the statements of Hamblen in regard for dysmenorrhea. I feel that his chapter on dysmenorrhea is not as complete as it might be, and I am forced to take issue with his statement that "More diligent and meticulous examinations infrequently relates organic diseases to dysmenorrhea". While it is quite true that organic pathology does not as frequently produce dysmenorrhea as previous opinion would seem to indicate, it is still true that there is a large number of women who suffer more than pelvic discomfort, who suffer true pelvic pain, in association with organic disease, which when corrected mitigates or completely relieves the previous menstrual pain. Hamblen speaks rather harshly of surgery in primary or essential dysmenorrhea, and perhaps gives too much emphasis to the psychic factor in dysmenorrhea. While I am in agreement that the operations for retroverted and antiflexed uteri belong to a past generation in the general sense, one cannot make such generalization but must consider the individual patient; and there are undoubtedly instances and not infrequently so when the suspension of a completely retrodisplaced uterus relieves otherwise severe dysmenorrhea. We all agree that sympathetic surgery in dysmenorrhea is a desperate last resort which "cures" by eliminating pain without correcting its cause. A gynecologist who can report large series of sympathectomies is either having the dregs of others practice dropped into his lap, or has not adequately studied his patients. Despite these minor criticisms, however, the chapter on dysmenorrhea contains a fair summary of the current theories of etiology of primary dysmenorrhea, and outlines the therapy more or less generally used, with I think, correct emphasis upon the chaotic state of therapy in this condition, and the relatively poor results obtained from most types of therapy. It condemns, but should condemn more strongly the indiscriminate use of harmonal therapy.

It is rather surprising that the condition of amenorrhea is not discussed more fully, nor is its treatment outlined.

The treatment of functional uterine bleeding will undoubtedly provoke considerable resentment by individuals whose theories include other methods of therapy than at of cylic sterol therapy, "and pituitary regulation." While Hamblen has had brilliant results with this method, these results have not been obtained universally by other workers in the field. This reviewer feels that the method of cylic sterol therapy is of definite value and yields beneficial results in a reasonably high percentage of correctly selected patients. But despite careful selection of patients and the utilization of the therapy in accord with the methods of Hamblen, as outlined, one does see failures. Other methods of therapy should have been discussed to make this particular section more complete. Some of the recent work on the interrelation of Vitamins and hormones might have been discussed here with some enhancement of this particular section.

Hamblen has strongly condemned the use of androgenic therapy in the female throughout the book, beginning in the preface and including remarks in the various sections. The treatment is termed as being unphysiologic and it is indeed contraphysiologic. This reviewer has felt as strongly as Hamblen, that every method employed in endocrine therapy in the female should be directed toward preserving or increasing the feminity of the individual rather than utilizing contraphysiologic methods, which include in their use potential virilistic effects. However, this is probably an extreme view, and more recently this reviewer has felt that there are definite indications for the cautious use of androgenic therapy in gynecology. It should always be used with the dangers of virilization well in wind, and prescribed within the range of relative safety. The patient under such therapy should always be warned of the possible untoward effects, and therapy should be stopped if any are noticed. While it is quite true that androgens are contraphysiologic, that factor per se should not flatly contraindicate their use. It if is possible to secure an effect desired with a contraphysiologic drug without damage to the individual to whom it is being given, it should be used. It is probable that the pendulum will swing back and forth in regard to this particular aspect of gynecological endocrine therapy, and as our knowledge of the field increases, a somewhat more rational view may be employed. It is probably incorrect at the present time to criticize either viewpoint, considering the current status of information.

When one writes a chapter on therapeusis in endocrinology, it would probably be wise to boldly write the date of publication across the top of each page, and remind the reader that within six months or three months or an indefinite period, after publication, the therapy may be dated and outmoded. Our knowledge advances and many of our concepts change with commendable rapidity. It is the fault of the reader rather than the writer if an outmoded therapy in endocrinology is condemned. When one reads a particular therapeutic measure, one should bear in mind the research both laboratory and clinical which may have ensued since publication. This chapter will probably "date" badly in a relatively short time, however, it is free of most of the gross errors and outmoded empirical therapy contained in publications on therapeusis in endocrinology. At the present time it stands as an excellent source of information on therapy in this particular specialty.

This book stands out as a very valuable and needed contribution, and is recommended unreservedly for those who would attempt endocrine therapy in gynecology.

B. BERNARD WEINSTEIN, M. D.

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ANOXIA RESULTING FROM METHANE

REPORT OF CASE

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In view of the fact that the majority of homes in the metropolitan area of New Orleans are heated with open, radiant, gas burning heaters, it is not surprising that anoxia resulting from natural gas poisoning occurs frequently. These heaters are potentially hazardous for several reasons: Drafts of air may extinguish the flame; defective plumbing may permit leaks; the jets may become completely or partially plugged with dirt, rust or corrosion; and there is a propensity for many inhabitants to permit the flame to burn while they sleep. The natural gas utilized in the homes and industries of New Orleans consists chiefly of methane, not carbon monoxide as many believe. The purpose of this paper, therefore, is to acquaint physicians of this community with the above facts and to summarize the pharmacologic effects of methane and of the anoxia resulting therefrom, together with a case report to illustrate the management of these cases.

An analysis of the natural gas distributed in New Orleans is as follows:

Carbon dioxide (CO_2)	0.40
Oxygen (O_2)	0.00
Ethane (C_2H_6)	4.62
Methane (CH_4)	94.23
Nitrogen (N_2)	0.75
	100.00 per cent

Specific gravity 0.604

Btu (Sat. 30" Hg. & 60° F.)

It will be seen from this analysis that the natural gas of this community does not contain any carbon monoxide. However, improper adjustments in open gas heaters may lead very readily to the production of carbon monoxide, and natural gas poisoning in this area may be the result of methane poisoning, carbon monoxide poisoning, or both, depending upon the lack of, or the conditions of, combustion. Both methane and carbon monoxide are asphyxiants, substances which induce a deficiency in the supply of oxygen to the tissues through some means other than interference with the mechanics of respiration[1]. Such substances produce their action solely by interference with oxygenation. Carbon monoxide is a chemical asphyxiant and combines with hemoglobin, thereby excluding oxygen. Methane is a simple asphyxiant producing its effects only by exclusion of oxygen. As Henderson and Haggard have pointed out, the effect of methane as an asphyxiant is proportional to the extent to which it diminishes the partial pressure of oxygen.

Methane is produced whenever organic matter decomposes. It is one of the gases found in the intestine. Cellulose decomposes to form methane, carbon dioxide and volatile fatty acids. There is no evidence that methane may be further decomposed in the human body. Wells, quoted by McGuigan,[2] reported a case of pneumothorax in which the products of decomposition by putrefactive saprophytes contained 4.3 per cent hydrogen, 6.25 per cent methane, and traces of hydrogen sulfide. In nature, methane is the principal constituent of "fire damp" and serves as a cause of explosions in coal mines, whereas the term "after damp" is applied to the gaseous mixture remaining in mines after the explosion. Most physiologists agree that the physiologic effects of "after damp" result from either an excess of carbon monoxide or a deficiency of oxygen.

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The volatile hydrocarbons when inhaled produce depression of the central nervous system. Some, such as ethylene, cyclopropane and acetylene, are effective general anesthetic agents; methane, ethane, and other saturated hydrocarbons are not suitable for this purpose. According to Adriani,[3] methane was first utilized as an anesthetic agent in 1867. In a review of gaseous anesthetics in 1924, W. E. Brown[1] found methane to have a very narrow zone of safety, unconsciousness occurring when the alveolar air reached 87 per cent by volume and death by asphyxia at 90 per cent. In view of the 94 per cent mixture of methane in the natural gas of this area, asphyxiation can readily result from excess inhalation of natural gas. According to McGuigan, Herter found that a mixture of 79 per cent methane and 21 per cent oxygen can be inhaled without effect. Luessum,[2] on the other hand, noted that inhalation of 80 per cent methane and 20 per cent oxygen for twenty minutes produced slight anesthesia with ringing in the ears, redness of the face, and dizziness. The pulse was unaffected. Recovery occurred in a few minutes. Obviously the hazard of explosion is an additional disadvantage to the use of methane as an anesthetic agent.

CASE REPORT

M. L., a 34 year old, white male, was admitted to the accident room of Charity Hospital at 11:10 p. m., January 10, 1944, in a state of unconsciousness and marked dyspnea. A history gathered from friends disclosed that he had been ill with an upper respiratory infection and that he had remained in his room with the doors and windows closed for twelve or more hours with the radiant heater burning. The flame had been extinguished by unknown factors while he was sleeping. The patient had a suffused appearance, Cheyne-Stokes respirations at a rapid rate, and the pupils were equal and reacted to light. His blood pressure was 115/80, pulse 110, rectal temperature 102° F. There were no rales in his chest or other evidences of pulmonary edema. The most significant feature of the physical examination was the marked respiratory distress during which he breathed deeply and rapidly with periods of marked hyperventilation alternating with periods of hypoventilation. These periods were separated by two minute intervals. During the period of hyperventilation, it was noted that marked carpopedal spasm and hypertonicity of all muscles were present. He was treated with oxygen by nasal catheter, repeated pharyngeal aspiration, calcium gluconate intravenously, a transfusion of 500 c.c. of whole blood, an infusion of 1,000 c.c. of saline, 100 c.c of M/6 sodium lactate, and 200 c.c. of Ringer's lactate in 5 per cent glucose, one ampule (2 c.c.) of metrazol intravenously, and 0.3 gm. of phenobarbital administered in three hourly dosages of 0.1 gm. each to control muscular activity. Observations of pulse, respirations, temperature, blood pressure and general condition were recorded at fifteen minute intervals for the next seven hours. No significant changes were noted but it was felt that it would be safe to transfer him to the ward.

His course in the hospital for the ensuing week was stormy. His temperature rose to 105.5° F. (rectal) on the following day and both physical and roentgenographic evidences of bronchopneumonia were present. Sodium sulfadiazine was administered by the intravenous route. His temperature gradually returned to normal by the end of the first week of illness. Coma continued for four days then gradually improved for the next three days. Cheyne-Stokes respirations, as previously described, were observed for two full days before improvement occurred. Weakness of the left side of the face was noted and intermittent muscular spasms were present. On January 12, two days after the asphyxiation occurred, all members of the staff concurred in a grave prognosis. The attending neurologist elicited bilateral Babinski and Hoffman's reflexes and absent abdominal reflexes. It was his impression that the patient had scattered cerebral injury which caused both the fever of 105° F. and the deep coma.

Therapy at that time consisted principally of symptomatic and supportive measures. Oxygen by nasal catheter, temperature measures of alcohol sponges, intravenous sodium sulfadiazine, intravenous medications to maintain both nutrition and fluid, and nursing care were the chief agents. Nine hours later, the patient began to improve clinically and gradual recovery ensued during the next several days. The depth of the coma passed gradually to lucidity; respirations and temperature returned to normal; the patient began to recognize attendants; later he could eat; and all neurologic manifestations subsided except for partial deafness in both ears which persisted until he was discharged.

The laboratory data are of interest in that hemograms, urinalyses, blood cultures, spinal fluid surveys, and periodic blood chemical determinations for blood glucose, carbon dioxide combining power, serum chloride, and blood urea nitrogen were consistently within normal limits except for a mild acidosis (carbon dioxide combining power of 30 per cent) on admission, which gradually returned to normal levels during the next 36 hours. A spectroscopic examination of the blood failed to reveal any evidence of carbon monoxide. When bronchopneumonia developed, a leukocyte count of 31,600 was noted and the differential count revealed 86 per cent polymorphonuclear cells. An electrocardiogram made on January 13 revealed a low auricular or junctional pacemaker and low T-waves which were interpreted as being toxic in type. On January 19, the electrocardiogram was normal.

On January 28, 1944, when he was discharged, the patient was completely well except for slight impairment of hearing. No neurologic residuals could be demonstrated by physical examination and an electroencephalogram made on January 26, two days prior to discharge, was interpreted as manifesting normal rhythm.

COMMENT

Two mechanisms, asphyxia and narcosis from the inhaled methane, were doubtless operative in the clinical picture presented by this patient. Of the two, that of asphyxia or cerebral anoxia seems to be the more important, although it should be emphasized that the effects of anoxia in the production of surgical anesthesia are still incompletely evaluated. Courville[5] has presented an exhaustive review of this subject and has outlined the clinical course and sequelae of asphyxia. Apparently the state of asphyxia was prolonged and severe, conditions under which definite central nervous system degeneration occurs. Prolonged sublethal asphyxia alone may be responsible for these changes and in the present patient is accountable for the symptomatology seen as well as the sequel of impaired hearing. The fact that this patient left the hospital with impaired hearing may be interpreted as cerebral damage of a more or less permanent character and agrees well with the cases studied by Courville. The patient also showed pulmonary sequelae initially, the result of atelectasis and leading to bronchopneumonia. Methane has no direct irritant action upon the respiratory tract[1].

Treatment of methane poisoning is, in the acute stages, removal from the source and institution of oxygen therapy, preferably combined with 5 to 7 per cent carbon dioxide. Such therapy will, if the exposure has been of short duration, effect relief of symptoms in a few hours. Added therapeutic agents are necessary in prolonged asphyxia, as brought out in the present case. These measures are symptomatic and supportive. Headache, for example, may persist in the postasphyxial period from edema of the cerebral tissues and demand dehydration by administration of hypertonic solutions or spinal tap for relief. Pulmonary edema and pneumonia give rise to appropriate measures to combat these states. Great variation in the therapeutic procedures will arise depending on the indications in the specific case.

SUMMARY

A case of anoxia following methane inhalation (natural gas poisoning) in New Orleans exemplifying the problems in therapy and the occurrence of sequelae, has been presented.

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MISSED LABOR*

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Missed labor is the term applied to a fetus that dies *in utero*, is retained there for months, undergoing mummification or putrefaction, according to whether or not the membranes have ruptured.

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*Read before the Orleans Parish Medical Society, April 9, 1945.

Menzies and Hennig record two cases, one being retained for two hundred and eighty and the other two hundred and ten days respectively, after full term. In the former instance it was removed at autopsy; in the latter, after incision of the cervix. Flatau records an extraordinary case in which the condition persisted for fifteen years, when the fetal bones were removed from the uterus at autopsy.

The etiology of the condition is not known. In the cases reported by Labhardt it was associated with carcinoma of the cervix and myoma of the uterus. Ciulla is inclined to associate the phenomena with excessive fatty degeneration of the uterine musculature.

The symptomatology varies from a few painful uterine contractions with a cessation of fetal movements to those of weakness, lassitude, the development of secondary anemia, waxy appearance, and fever. The physical findings are those associated with a dead fetus.

The treatment should be induction of labor as soon as the diagnosis is made. If induction by the usual methods fails, then more drastic steps have to be taken; this depending on the condition of the patient.

CASE REPORT

Mrs. L. A. B., white female, aged 31, a housewife, was first seen on July 22, 1943. Her chief complaints were nausea, vomiting, pains in the upper right abdomen referable to the right shoulder for the past two weeks. She had noted a mass in the lower abdomen. The menstrual history had been regular every 28 days, lasting two days, associated with severe cramps. Her last normal period was April 10, 1943. She has had three pregnancies, the first of which ended in a living baby now six years old; the second in an ectopic pregnancy for which she was operated on; and the third in a criminal abortion in May, 1942. Examination revealed an enlarged uterus to the size of a five months' pregnancy.

Progress: On August 19, 1943, fetal movements were felt. During the next three months pregnancy developed normally; fetal heart tones were heard and the height of the fundus increased. The only untoward complaint during this interval was "spotting", associated with cramps. Progesterone was given at this time in an effort to stop these findings. An x-ray taken at this time revealed a fetus about seven months.

On December 29, 1943, fetal movements stopped; heart tones were no longer heard; the height of the fundus, which has reached 28½ cm., began diminishing.

On January 6, 1944, a Freidman-Lapham test was reported negative.

On January 20, 1944, the patient was hospitalized for induction of labor. Medical induction with pituitrin and pitocin failed to incite labor, and an attempt to introduce catheters was made. The cervix was found firm and scarred and could not be dilated more than enough to pass a 14-F catheter. It was hoped that even this would act as a stimulation to uterine contractions and cause sufficient dilatation to introduce a Voorhies bag. An x-ray taken after this procedure showed a dead fetus of approximately seven months with a rubber catheter lying to the right and posterior to the fetus. The head of the fetus was well up in the uterine cavity. On failure of this procedure to induce labor, consultation was asked for. The consultant expressed the opinion that the patient probably had a premature separation of the placenta (this having caused the fetal death) and that since the methods used had failed to incite labor, and the patient's condition being good, that she be allowed to go home; that if bleeding returned or the patient showed any toxic manifestation, that she be admitted for a Porro section. She was discharged from the hospital on January 1, 1944.

For several weeks after returning home her general condition remained good except for the development of a secondary anemia. For this she was given liver extract intramuscularly. She was also given large doses of an estrogenic substance (10,000 units daily of thelestrin for 10 days) with the hope of inciting labor pains. With reasonable waiting and with the patient's condition becoming toxic, she was re-hospitalized on March 8, 1944, for operative intervention.

Under general anesthesia the patient's abdomen was opened after excising an old midline scar. The uterus was the size of an eight months' pregnancy. An incision was made transversely at the vesicouterine reflection, the bladder reflected downwards and the serosa of the uterus upwards. The uterus was then opened longitudinally. On entering the amniotic sac, a sero-sanguineous, slightly pungent fluid was drained. A male, shriveled-up fetus was extracted without difficulty. An effort to exteriorize the uterus was met with difficulty. Further exploration showed the uterus to have a thin, friable wall that did not contract with pituitrin injected directly into its musculature, and bowel and omentum were adherent to it on all sides. Exploration of the uterine cavity showed that the placenta was implanted firmly over the internal os and that attempt to free it caused bleeding. Since the uterus could not be freed sufficiently (without greatly jeopardizing the patient's life) for the performance of a hysterectomy, the following alternate procedure was instituted: The cord was transfixed with chromic No. 1 close to the placenta and the excess cord removed; the bladder peritoneum and serosa of the uterus were sutured to the parietal peritoneum; the uterine musculature was sutured to the fascia. This was done for the full extent of the uterine incision. The skin and fascia above and below this area were closed in the usual manner. The uterine cavity was packed with lap sixes, two in number.

The patient postoperatively ran fever to 101.6° for two days, returning to normal on the third day. She received blood and fluids parentally during the first 24 hours. She made an uneventful recovery, leaving the hospital on the eleventh postoperative day. The initial lap sixes were removed in 36 hours and the wound re-packed. The entire placenta had sloughed out by the time she had left the hospital.

The uterine wound took four months to close completely, each month discharging menstrual blood. She has menstruated normally since then.

SUMMARY

This case report is presented to you because of its unusual features:

1. The infrequency of the condition.
2. Failure to go into labor with the usual methods of induction. This may have been due to the firm, scarred cervix and a soft, flabby uterine wall which was incapable of being stimulated.
3. The necessity for surgical intervention.
4. The interesting operative findings—placenta previa centralis; the soft, friable uterine wall; the marked omento-intestinal adhesions.
5. The operative procedure employed to handle the findings.

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DISCUSSION

Dr. Vincente D'Ingianni (New Orleans): I saw this patient recently; menstruating normally, per vagina, the abdominal incision was completely closed. After viewing the pathology about the uterus, it was thought that the patient should be permitted to recover and return at a later date; for exploration, possibly hysterectomy. However, after a year or more this woman has no complaints, menstruating normally and is having a normal sexual life. This case points out the fact that when nature is given a chance to recover it often does so; therefore we must not be too hasty in doing extensive surgery.

Dr. E. L. Zander: I saw this patient in consultation and I want to call attention to the members that this procedure is rather an unusual operation. In reviewing cases at Charity Hospital from 1935 to 1945 we found one case reported out of the various operated on for ruptured uteri with pregnancy. Dr. Graffagnino performed a section at that time and did the same procedure as was followed in this particular case. I recommend a Porro because there have been many Porros performed at Charity Hospital for this type of case. I thought it the method of choice rather than vaginal section. The surgeon accepted that view, and, would have met with trouble if he had attempted a vaginal section. As it was he found no lesions and I think he is to be commended because the results speak for themselves. It is certainly something that should be called to our attention and should be remembered in this type of case and I think conservatism in some cases is to be recommended rather than radical procedures which we resort to in complicated cases.

I think the surgeons presented a splendid case. There are lots of unusual features about it; especially when the case did not go into labor with any procedure attempted and in the long run the results were one hundred per cent. I think both surgeons are to be complimented.

REVERSIBLE HEART DISEASE

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In general when one speaks of heart disease the immediate thought is of an invalid or at least a person in so-called "delicate health" who will be forced to spend the rest of his life on a more or less subdued scale and who may or may not live to a ripe old age depending upon the severity of the process and the intelligence of the physician and patient. Recently, as our knowledge has progressed there have come to be recognized certain forms of heart disease in which the prognosis is much better than in the usual types and indeed permanent cures may be effected by proper methods of treatment. Such forms of heart disease may be termed "curable" or reversible heart disease. Although relatively rarer than the more serious diseases of the heart, their importance to both the patient and the physician is easily recognized.

According to Eppinger and Burwell[2] "the word cure is used to indicate: (1) the inactivation or abolition of a disease process while its effects are still reversible, and (2) the repair of a disabling mechanical defect left by some injury or disease no longer active." Accordingly, they classify patients with curable heart disease into three groups as follows: "(1) A group of patients in whom the cardiac disability is the result of severe mechanical overload of the heart. The lesions or defects leading to such overload include patent ductus arteriosus, arteriovenous fistula, thyrotoxicosis and possibly anemia. (2) A group of patients in whom the cardiac disability results from a mechanical obstruction to the entrance of blood into the heart. Such obstruction occurs in the various forms of cardiac tamponade, notably those due to constrictive pericarditis, suppurative pericarditis and acute hemopericardium. (3) A group of patients in whom the cardiac disability is due not to a gross mechanical abnormality, but to a dysfunction of the cardiac muscle. This group includes patients who suffer from beriberi heart and the so-called myxedema heart."

Not included in this classification are such conditions as are produced by pregnancy, infectious diseases such as diphtheria, syphilis in the early stages, hypertension due to the Goldblatt kidney, and those due to neurogenic disorders. These are only mentioned in this paper for the sake of completeness, since they are relatively rare conditions as compared to the other forms of reversible heart disease which will be discussed. Syphilis, while by no means rare, is still not considered by many authors to cause heart disease that is reversible in the sense that the others to be discussed are. However, there have been many studies to show that cardiovascular syphilis can be prevented by prompt and early treatment.[5, 11]

THYROTOXIC HEART DISEASE

As Levine[11] has stated "This subject is probably the most important aspect of all heart disease for it comprises the one large group of cases in which the difference between accurate and inaccurate diagnosis and treatment is the difference between chronic invalidism or death and restoration of life and health."

We are all familiar with the cardinal symptoms and signs of thyrotoxicosis such as exophthalmos, nervousness, loss of weight with increased appetite, palpitation, fine nervous tremor and enlargement of the thyroid gland and in a patient who presents these symptoms the development of dyspnea, palpitation, chest pain, cough, edema of the feet and ankles, would at once be suspected as being caused by the thyroid condition and proper therapy employed. It is in that group of so-called "masked thyrotoxics" that these latter symptoms and signs may not be properly understood. Then the patient may be diagnosed as having some form of heart disease, usually mitral stenosis, because of the presence of a rough apical systolic or diastolic murmur or both, with a snapping first sound, or he may be diagnosed as having hypertensive heart disease. Levine and Sturgis[13] noted in 1924 that these cardiac symptoms may be the only ones of developing hyperthyroidism for a number of years. A patient may even develop congestive failure without presenting signs or symptoms to make the unwary aware of the true nature of his trouble.

The mechanism by which this thyrotoxic heart is brought about is not definitely understood but it is thought to be due to the increased load on the heart due to the increase in basal metabolism and also possibly to some direct action of thyroxin upon the cardiac musculature.[18] There is an increase in blood volume, peripheral vascular dilatation, and accelerated blood flow, all of which increase the work of the heart. "This burden is not discontinuous, like that of physical exertion, but is present both day and night."[2]

The majority of these patients are over 40, but Levine and Likoff, in a review of 409 cases of thyrotoxicosis submitted to subtotal thyroidectomy between 1923 and 1941, found six instances of congestive failure in patients under the age of 41 and three under the age of 30 when there was absolutely no evidence of other lesions such as rheumatic valvular disease, hypertension, or coronary artery disease. Of this group of patients 331, or 81 per cent, showed no other type of heart disease.[15] As we know, hyperthyroidism occurs four or five times more frequently in the female than in the male and therefore we would expect cardiac manifestation to follow a similar incidence and this seems to be the general consensus.

The symptoms and signs such a patient presents on visiting the physician may be varied. Levine and Sturgis[13] report five cases in which the chief complaint was palpitation, pain or dyspnea of over two years' duration. Eppinger and Burwell[2] report a case in which the mistaken diagnosis of mitral stenosis versus hypertensive heart disease was entertained for a considerable period of time. The patient had nothing referable to the thyroid gland until it was noted that he perspired much more profusely than would be suspected in a patient on complete bed rest. A basal metabolism was run and found to be elevated and under iodine therapy the patient showed marked improvement. Subtotal thyroidectomy was performed with excellent results.

In general the chief signs and symptoms of a patient with this form of heart disease will be: dyspnea, cough, edema, palpitation, chest pain and perhaps congestive failure. Attacks of paroxysmal auricular fibrillation occur frequently and Hurxthal considers this as important in hyperthyroid heart disease as glycosuria in diabetes. Some patients present a typical and severe anginal syndrome and this is the basis for performing thyroidectomy in such cases. However, operation primarily for the relief of the anginal pain is not favored at the present, as the benefits do not justify the operative risks or medical complications arising from the induced hypothyroidism. Geiger[6] reports only one apparent cure of the anginal syndrome in a series of five patients undergoing operation.

Diarrhea, weakness and nervousness, loss of weight, and increased sweating may be suggestive symptoms and of course those other symptoms mentioned above as being characteristic of hyperthyroidism are of importance. Irregular heart rate with tachycardia, large pulse pressure, edema, slight elevation of the systolic blood pressure, enlargement of the heart and extrasystoles may occur. A sign which Carter[20] considers pathognomonic, if arteriosclerosis and aortic insufficiency can be ruled out, is the pistol-shot sound heard in the cubital fossa. When cardiac dilatation takes place an apical systolic murmur may develop and the heart sounds may become snappy and forceful in character with an abrupt forceful apex beat. The basal metabolic rate will be elevated and when this condition is suspected an electrocardiogram should always be made to confirm the diagnosis. Electrocardiographic changes are not particularly characteristic and may show only sinus tachycardia or later evidence of congestive heart failure. The fluoroscope, according to Sosman,[18] may be of great value in suspecting this condition. The heart under the fluoroscope shows not only a rapid rate but "a vigorous, snappy hyperactive beat, in many cases just the reverse of what would be expected with a given degree of heart failure or anginal pain".[18] It is of interest that such hyperactivity may be seen in other forms of curable heart disease, such as beriberi heart, severe anemia, arteriovenous fistula, patent ductus arteriosus, as well as in neurocirculatory asthenia and pneumothorax.

Of particular importance is the fact that patients with severe symptoms of heart disease or failure, fail to show the expected response to the usual modes of treatment, such as complete bed rest, digitalization and diuretics. Such an occurrence should at once make us suspect this condition. The circulation time is usually normal or more rapid and this is an unusual feature of the condition.

The prognosis in this type of heart disease, when once recognized, is very good and under proper treatment a large majority of these patients can expect a complete reversal of their condition with a return to a useful and pleasant life. According to Levine, the prognosis and mortality rate in these patients who are older than the usual thyrotoxic patient are as good or better than in the younger patients with exophthalmos.

The treatment of this condition is the same as that for other forms of hyperthyroidism, that is, subtotal thyroidectomy with preoperative use of iodine. In many cases the response to iodine therapy may be so good that the patient will refuse operation but it must be remembered that eventually the patient will become refractory to the use of iodine. The use of quinidine preoperatively, if the patient is in auricular fibrillation, is a controversial matter. The Lahey group in Boston does not use it preoperatively, since most patients recover spontaneously after the thyroid is removed; if not, then quinidine is administered. The group at Massachusetts General Hospital uses quinidine preoperatively except in those patients with active auricular fibrillation beginning 24 hours before operation and continuing 24-36 hours following the operation. As in those patients with the usual hyperthyroid state, rest and sedation are of importance to allay their fears and worries. Following operation most of these patients show a rapid and remarkable improvement.

CHRONIC CONSTRICTIVE PERICARDITIS

This is a condition which has been frequently overlooked and which has not been well understood until recent years. Claude S. Beck[1] has studied the condition from both the experimental and clinical viewpoint and some of his conclusions are of interest. The heart in this condition is small and quiet. It functions efficiently as far as the valvular and muscular mechanics are concerned but its action is still inadequate, due to the fact that less blood can get into the heart because of the compression. Beck is of the opinion that the heart muscle can actually undergo atrophy of disuse as a result of the decrease in the work load. He does not believe that adhesions *per se* are of any importance clinically in causing the symptoms and signs of congestive heart failure.

There are two types of compression of the heart, the acute and the chronic. The acute type is brought on by such things as a penetrating wound of the heart, or the rapid accumulation of pus in pericardial cavity, rupture of a myocardial infarct or hemorrhage from a myocardial contusion. The chronic type may be produced by slow hemorrhage, or accumulation of pus in the pericardial cavity, mediastinal effusion. infections such as rheumatic fever followed by formation of scar tissue, with contracture or chronic effusions due either to pyogenic organisms or tuberculosis. Tumors may also cause a chronic compression.

The mechanism by which the two conditions are brought about varies and thus gives rise to two triads which are helpful in their diagnosis. In the acute compressions the triad consists of "(1) a small quiet heart, (2) a rising venous pressure, and (3) a falling arterial pressure." That for chronic compression of the heart consists of "(1) a small quiet heart, (2) a high venous pressure, and (3) ascites and enlargement of the liver." In the chronic type other signs and symptoms which are the result of increased venous pressure such as engorgement of the veins of the head and neck, enlargement of the liver, ascites, fluid in the pleural cavity or edema, are present. Electrocardiographic changes are not characteristic for either condition. The x-ray is often of value in confirming the diagnosis. Under the fluoroscope the heart will show diminished or absent pulsations. It may be enlarged only slightly, if at all. If there are adhesions to the diaphragm it may show an abnormal jerk with each systole. With the passage of time calcified plaques become visible which can be demonstrated in the x-ray or by fluoroscopy. A tachycardia or rapid beating of the heart may be visible under the fluoroscope.[18] In addition to the above the findings of normal N.P.N. and blood sugar levels, blood counts and urine, with a normal or only slightly lowered serum protein level, and normal liver functions tests in a patient showing symptoms and signs as above, should make us suspect the condition.[6]

Treatment of these conditions is surgical and very good results are reported by most workers.[1, 5, 6, 11] In the acute compressions, aspiration of the pericardium or open operation may be life-saving measures. In the chronic cases pericardectomy is frequently followed by complete and permanent recovery. In those cases which do not show the rapid recovery that one would expect Beck[1] believes that atrophy of disuse in the heart muscle is to blame. We may conclude, however, that this condition also belongs in the realm of reversible or curable heart disease.

PATENT DUCTUS ARTERIOSUS

This condition which formerly carried with it a very serious prognosis is now considered in properly selected cases to be a form of reversible heart disease. This is brought about through the field of surgery. Gross,[8] in 1939, reported on the first successful case of a patent ductus which was closed by surgical ligation in 1938. Since that time he has reported on a total of ten cases, eight of which were definitely improved. Of the other two, one died from a *Staphylococcus aureus* infection and the other proved to have another associated cardiac abnormality.[8] Others have reported similar results.

The condition is not as rare as one might think and it is estimated by Keys and Shapiro that at least 20,000 persons in the United States have a patent ductus arteriosus at the present time. Although there are cases reported of such persons living a normal life expectancy, in the majority of cases death ensues before 30 years of age. Death is usually due to either sudden or slow cardiac failure or to a subacute bacterial endocarditis.

The condition may also cause physical underdevelopment or invalidism in a growing child. It may not manifest itself at birth, not being recognized in some cases until the fourth year of life.

The diagnosis of the condition is comparatively easy. There is usually a loud, characteristic "machinery murmur" that may be heard over the entire precordium, in the axilla and back loudest in the third interspace to the left of the sternum. The patient may show retardation of growth and shortness of breath.[17] A thrill may be felt over the pulmonic area. The heart may be enlarged to percussion and other physical findings, but will almost always show some enlargement on x-ray. The diastolic blood pressure is significantly low, while the systolic may show no change. Since the blood is flowing from the arterial to the venous side of the circulation the patient will not show cyanosis unless there is some complicating lesion to cause it. The electrocardiogram is not characteristic and may show either left or right axis deviation, usually the former. X-ray studies have been carried out by Eppinger and Burwell[3] and by Sosman[81] and the changes seen are thought to be of valuable aid in establishing the diagnosis although not diagnostic in themselves. These consist of:

"1. The heart is usually enlarged, especially the left ventricle.

"2. The pulmonic artery (often incorrectly called the 'pulmonary conus' is more prominent than normal, projecting anteriorly and to the patient's left.

"3. The hilar vessels are enlarged, due to engorgement, especially on the right side, where they are normally larger and more easily visible.

"4. In less than half of the cases systolic pulsation of the hilar vessels can be seen fluoroscopically, the so-called 'hilar-dance.'

"5. The left auricle has been dilated posteriorly in nearly all of our cases, so much so in some patients as to make me believe there was an associated mitral stenosis, later proved incorrect.

"6. There is a striking hyperactivity of the left ventricle and an associated increased expansile pulsation of the dilated pulmonary artery synchronous with the hyperactive ventricular systole. Both decrease strikingly after ligation of the ductus".[18]

These findings in addition to those of the physical examination make the diagnosis of patent ductus arteriosus comparatively easy.

It is important that studies be made to rule out associated cardiac abnormalities which would render the effects of surgery negligible. Leaman[11] states that in patients living until the seventh year there is little chance of there being an associated defect.

Operation is carried out only in a selected group of patients. Those showing underdevelopment, cardiac decompensation or failure are probably definitely justifiable indications. As a preventive measure against the development of subacute bacterial endocarditis it is probably not indicated as strongly, although a few cases with excellent results have been reported following operation.

Treatment, as mentioned above, consists of surgical ligation of the patent ductus, and in the usual case the patient shows immediate and marked improvement.

ARTERIOVENOUS ANEURYSMS

This condition is somewhat similar to that of a patent ductus arteriosus except that in this condition both circulatory systems are involved with an increased blood flow present in both the systemic and pulmonary circulation. The condition may produce eventual heart failure that may occur even months or years after the opening of the fistula. This fistula may also be the site of an endarteritis caused by *Streptococcus viridans* with consequent septicemia and embolic phenomena.[5, 11]

The arteriovenous communication may be either congenital or acquired, the latter usually resulting from trauma such as a gun-shot wound in the femoral or popliteal regions. The patient will usually suffer from edema of the involved extremity and intermittent claudication and ischemic neuritis. Over the fistula one can palpate a thrill and pulsation while the skin shows increased heat. A murmur may be heard over this area. As the result of the increased flow of blood with increased venous return the heart is overworked to the point of hypertrophy and congestive heart failure in some cases. "Cardiovascular findings closely resemble those found in aortic regurgitation, beriberi heart and thyrotoxicosis."[17]

Treatment of this condition results in surgical ligation or removal and there usually is a marked improvement in the patient's condition. Indeed, cures have been reported in those cases in which the aneurysm contained vegetations of *Streptococcus viridans* and Leaman[11] reports a case which he believes would have resulted in cure had the patient received treatment at an earlier date.

ANEMIA AS A CAUSE OF REVERSIBLE HEART DISEASE

A decrease of hemoglobin below 50 per cent is known to produce a necessary increase in the work of the heart as a result of the relative anoxemia. On the other hand, a severly anemic patient, as in pernicious anemia, may show signs and symptoms of congestive heart failure as a result of the underlying anemia. Hookworm infestations are a frequent cause of such severe anemias.

These patients present themselves with dyspnea, fatigability, weakness, precordial pain, the hemic murmurs, and an enlarged and dilated heart which may have progressed to the stage of congestive heart failure. Circulation time may be more rapid or normal; the blood pressure low and an increase in cardiac output and oxygen utilization. X-ray shows a hyperactive heart which is usually enlarged. [5, 18]

The diagnosis in these patients is based upon the blood picture and demonstrations of the underlying cause. Therapy consists of transfusions, liver, iron, rest in bed and supportive therapy. Digitalis and diuretics are of value in some cases of congestive failure, more so in this condition than in some of the other forms of heart disease discussed in this paper.

THE MYXEDEMA HEART

This constitutes probably the most controversial subject of all those considered in the scope of his paper. Zondek, in 1918, described the "myxedema heart" as follows:

I. Before treatment with thyroid.

"1. Dilatation of the left and right heart which may be of a very high degree.

"2. Slow, indolent heart action with

normal blood pressure.

"3. Lowering of the aricular wave and the T-wave of the electrocardiogram.

"II. Following treatment with thyroid.

"1. Return of the heart from marked dilatation to somewhere near normal size.

"2. More lively heart action and more rapid pulse without change in the blood pressure.

"3. Gradual return of the P and T waves to normal."[12]

Fahr in this country has described a condition similar to that described by Zondek and agrees with him that there is a condition characterized as above which is properly termed the "myxedema heart". Fahr[4] reports a number of cases which bear out his theory that congestive heart failure is frequently seen in myxedema and that these conditions will clear up rapidly following thyroid therapy and that they will show little, of any, improvement under the usual therapy used for congestive heart failure.

Other workers from their studies of myxedematous patients have definitely disagreed with Zondek and Fahr and state that they found no such condition as that described by them and that any myxedematous patients having heart disease had some cause for it other than the myxedema. Criticism has been directed toward this group however because their cases have not been as carefully followed with x-ray and other studies as have those of the proponents of the myxedematous heart.

It seems that a more or less middle of the road attitude is the best to take in considering this condition. As stated by Means, White and Krantz[16] the results of their studies with those of others would "seem to justify the conclusion that 'myxedema heart' in the sense of Zondek and of Fahr, is far from common. On the other hand, we are not prepared to join those who feel that it does not exist." Lerman, Clark and Means[12] agree with these workers and are of the opinion "that the heart in myxedema is usually enlarged and decreases in size when thyroid is administered and that the change in the size of the heart is of diagnostic importance." They differ from Fahr as shown by the following statements. "Cardiac failure due to myxedema is uncommon and slight if present. It is practically always associated with hypertension and arteriosclerosis."

The cause of the increase in heart size in myxedema is not well understood. Experimentally cretinoid sheep and goats have shown evidence at autopsy of cardiac dilatation and a flabby myocardium, and it is generally considered that there is a loss of muscle tonus and an interstitial edema which occurs in the hearts of some myxedematous patients similar to conditions found in the other parts of the body.

The electrocardiographic changes, that is, inversions of the T waves, lowering of the P waves and QRS complexes or negative QRS complexes, have been shown to occur not only in the myxedema heart of Zondek and Fahr, but are also found in other myxedema patients as well and thus cannot be considered as strictly characteristic. However, these will also show changes toward the normal under thyroid therapy.

The blood pressure has also been observed to be somewhat elevated in these cases of myxedema[12] while others[4] have reported cases with no change in the blood pressure. However, in those cases with an increased blood pressure there was usually a tendency to return to normal following thyroid therapy. Those cases showing the least improvement were those with associated hypertension or arteriosclerosis. It is also of interest that those patients showing hypertension and arteriosclerosis more clearly fit the term "myxedema heart" as used by Zondek and Fahr, that is, cardiac dilatation with congestive heart failure than those patients who do not have the conditions. However, it has long been known that myxedema predisposes to arteriosclerosis.

Other findings may be present such as peripheral edema, rales in the lung bases, enlargement of the liver, which may be considered as due to the heart condition, but it should be remembered that they might be caused by the underlying disease primarily. Of course in these cases the usual symptoms and signs of myxedema, such as dry, scaly skin, mental dulness, puffy eyelids, or diminished basal metabolic rate, are present.

In summary it seems that the following conclusions may be drawn. There is a condition which occurs in some patients with myxedema which is characterized chiefly by enlargement of the heart, electrocardiographic changes, and changes in the blood pressure which may, though usually do not progress to congestive heart failure. Such a condition does not respond in the usual manner to digitalis and the routine therapy which is used, but will respond, in some cases markedly, to the use of thyroid extract, and therefore can be considered as being due primarily to the myxedematous condition.

In regard to therapy with thyroid extract it is wise to remember that too rapid use may cause coronary occlusion or anginal attacks. The former is thought to be due to the associated coronary sclerosis that is seen with a decrease in the size of the lumen of the coronary vessels at the same time that the work of the heart is increased by the raising of the metabolic rate. The latter condition may be brought about in a similar manner. In a patient who begins to show anginal pain under thyroid therapy it is probably best to regulate the therapy so that a middle path is followed increasing the metabolic rate as much as possible and yet stopping short of the point which will produce anginal symptoms.

HEART DISEASE DUE TO VITAMIN DEFICIENCY

Beriberi, which may be defined as "a complex clinical syndrome which follows failure to ingest, absorb or utilize sufficient amounts of vitamin B_1, is the only deficiency state which in the light of our present knowledge is associated with definite circulatory disturbances and failure."[10]

This type of deficiency syndrome with its effects upon the heart and circulation has long been known in the Orient. Wenckebach and Aslsmeer who studied the condition in Java reported from their case histories and autopsy findings a typical syndrome and popularized the term "beriberi heart." Race, age, sex, diet, country and other factors tend to change this typical picture when it is studied by other workers. Weiss and Wilkins[19] found in Boston many patients who were evidently suffering circulatory disturbances and/or cardiac failure but who presented wide variations from the typical Oriental beriberi of Wenckebach.

There are essentially two types of beriberi, the "dry" in which the signs are chiefly referable to the nervous system and the "wet" in which there is edema of varying degree and with which type circulatory disturbances are mainly manifest. Combinations of the symptoms and signs of these two types are of course possible but my discussion will be limited for the most part of the "wet" type and in this form nervous symptoms are liable to be minimal or absent.

The mechanism by which the beriberi heart is brought about is still not too well understood. The theory which was formerly accepted was advanced by Japanese workers who considered the cardiac disease to be due to a disturbance in function and a degeneration of the vagus nerves.[19] They based their theory on the tachycardia and evidence histologically of demyelinization of the vagus nerves. Such changes are not always seen and consequently this theory has fallen in disrepute. Wenckebach thought that there was a peculiar hydroptic degeneration in the heart muscles, that is, edema of the heart muscle due to a disturbance in water metabolism, which causes a loss in power of contractility and resistance to stretching. In addition to this there is a dilatation of the arterioles which allows an increased volume of blood to flow more rapidly to the right heart with resultant dilatation and failure of the right heart. Accordingly, Wenckebach characterized his "beriberi" heart on the findings of right sided heart failure without evidence of left heart failure which is made worse by the administration of adrenaline and improved by the administration of pitressin.

Weiss and Wilkins[19] disagree with Wenckebach and state that the "cardiovascular disturbances caused by nutritional defects do not form a rigid clinical syndrome," and they are unable to demonstrate a significant difference in the water content of the heart in patients suffering from deficiency heart disease as compared to patients with normal hearts or who suffered from organic heart disease with anasarca. Also they have studied patients who presented evidence of left heart involvement or failure and have described electrocardiographic changes in such patients, while Wenckebach demonstrated only one type of deficiency syndrome which occurred in Java and there may be other types or, as stated above, other factors such as race, age, country, diet, or occupation, may cause a different type of response to the deficiency.

The observations of other workers when correlated together make the picture a little more complete. "The first of these is that vitamin B_1 is a catalyst necessary in complete oxidation of carbohydrate, the lack of which decreases the contractile power of heart muscle. The second is the observation of Harrison and Pilcher that edema *per se* increases the work of the heart and thus would secondarily contribute to the production of heart failure. The third is the frequent observation that subjects with beriberi who have a polyneuritis of a degree still permitting physical effort are the most likely to develop heart failure."[10] These three factors are all present in most patients with beriberi who develop congestive failure.

The Oriental form of beriberi occurs most frequently in coolies or the lower classes and seems to be directly related to a dietary deficiency, since rice constitutes the basic staple of their diet. It is known that in the process of polishing, the vitamin B content of rice is greatly diminished. In the United States, although the problem is basically a deficiency, other factors than economic may play a part in its development. According to Goldsmith[7] the average American diet is apt to be deficient in this vitamin since it contains such a large percentage of sugar and highly refined cereals from which the "B" vitamins have been removed. It is only recently that the addition of vitamins to the processed foods or development of other processing methods have been used to overcome this source of deficiency.

Alcohol probably plays a more important part in the development of dietary deficiencies in this country than perhaps any other factor and a history of alcoholism or at least "heavy drinking" can be obtained from a majority of these patients. Its role is thought to be purely secondary due to the fact that it is a "food substance *par excellence* in this part of the world, and it supplies the body with the necessary calories but with a minimum of vitamin "B", an ideal combination of factors for the development of beriberi." There is also clinical evidence "that a high carbohydrate diet in animals and a pure rice diet in man predispose to clinical vitamin B deficiencies and it is possible that alcohol, as a carbohydrate, in large amounts may act the same way."[19]

In addition, other factors, such as elevation of the body requirements for vitamin B_1, as in fever, hyperthyroidism or pregnancy, dietary fads and idiosyncrasies, gastrointestinal disturbances which prevent proper absorption or utilization of the vitamins, may play a part and should be searched for in all such cases.

The symptoms of vitamin B_1 deficiency are not necessarily characteristic although those of a peripheral neuritis usually will cause us to consider the possibility. It is in those cases in which cardiovascular symptoms are prominent with little or no evidence of nervous involvement that the diagnosis may be most frequently missed. Symptoms and signs in this group include edema, dyspnea, tachycardia, right or left ventricular failure, enlargement of the heart, gallop rhythm, systolic murmurs and a normal or decreased circulation time. X-ray evidence of a hyperactive heart beat or pericardial effusion may be seen. The electrocardiogram shows findings, which though not necessarily characteristic or specific, add to the picture. These are shortened P-Q intervals, flattening of the T waves or low voltage and negative T_3 waves, and prolongation of the Q-T interval. In some cases acute circulatory collapse may ensue.

Of special importance in these findings is the shortened or normal circulation time and the response to digitalis therapy is not always as marked as would be expected in heart failure from the usual causes. These findings are similar to those seen in thyrotoxicosis, but the basal metabolism is usually lower in beriberi.

The diagnosis is based upon the elimination of the usual organic heart diseases, a history of alcoholism or dietary deficiency, and if the response to adequate amounts of vitamin B_1 is marked the diagnosis will be established. The nervous manifestations of the disease are also aids in diagnosis.

The prognosis in these patients, if the diagnosis is established early, is very good especially in regard to the circulatory manifestations which clear up much sooner than the nervous changes when present.

Treatment consists of adequate amounts of thiamin chloride given either parenterally or orally, plus an adequate diet. Joliffe and Rosenblum[10] suggest as much as 1000 mg. in divided doses within 24 hours in persons with marked circulatory collapse or severe congestive failure. In less severe cases they recommend the parenteral administration of 20-200 mg. thiamin chloride daily in two doses intramuscularly. Goldsmith[7] states that the therapeutic dose may vary from 5 mg. daily in a mild deficiency to 15-30 mg. daily in a severe neuritis to 50-100 mg. daily in the acute cardiac form of the disease.

The patient should be kept at absolute bed rest in failure because of the danger of death following exertion. An adequate diet should be given and vitamin B supplemented orally by means of brewers' yeast or other preparations.

The underlying cause of the defect should be looked for and eliminated.

SUMMARY

There are several diseases in which the heart is so affected that it may be considered the primary disturbance and the underlying lesion overlooked. In these cases the heart changes are frequently reversible if their cause is removed. It is of importance to both the physician and the patient that these conditions be recognized and treated early, since after a variable length of time the heart condition may pass beyond the stage of reversibility.

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THE BLOOD PRESSURE IN CORONARY OCCLUSION

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The purpose of this paper is to correlate blood pressure and the various aspects of coronary occlusion, namely: (1) etiology; (2) clinical picture; (3) its bearing on prognosis in the immediate attack; (4) its bearing on the ultimate prognosis. There is much discrepancy in the literature regarding this subject; therefore, any conclusions reached reflect the opinions of this writer and are not to be taken as the ideas of those investigators whose clinical material and statistics are cited in this paper.

In the past twenty years, there have been no more than five articles written about the blood pressure variations in myocardial infarction, and yet there are relatively few physicians who are not familiar with these changes, although the great majority are not cognizant of its implications. The scarcity of this subject in the literature has no explanation, as there have been hundreds of thousands of cases available in the large general hospitals of this country. These should have served as clinical material for much research concerning the role played by the blood pressure in the factors which are discussed in the present writing.

ETIOLOGY

Hypertension is a common antecedent of coronary occlusion and was concluded by Levine to be the most significant single etiologic factor, since it occurred in at least 40 per cent of his patients. Others have reported the incidence of hypertension to be from 25 to 75 per cent.

TABLE 1
INCIDENCE OF KNOWN HYPERTENSION IN PATIENTS WITH CORONARY OCCLUSION

Authors	Criteria	Cases of Coronary Occlusion	Cases of Hypertension	Incident Per cent
Barnes and Ball	S. 150 D. 100	42	24	57
Boas and Donner	S. 150	57	----	25
Connor and Holt	....	274	93	35
Cowan and Ritchie	S. 150	58	28	48
Eschbach	....	50	----	75
Levine	S. 150 D. 100	148	58	40
White and Bland	S. 160 D. 110	200	50	25
Palmer and McGill	S. 160 D. 100	212	155	73
Master	S. 150 D. 90	800	499	62

S=Systolic D=Diastolic

Allen,[1] in 1934, in a study of the incidence of hypertension in patients with coronary occlusion, as compared to the incidence of hypertension in the general population, found that there is definitely a higher proportion in the former group. Frost and Knight state that hypertension was present in 2 per cent of more than 600,000 candidates for life insurance. Janeway states that in a large group of unselected patients, the incidence of hypertension was 11 per cent. This latter figure was based on a systolic blood pressure of 165 mm. of mercury or more. Although there is no way of arriving at the true incidence of hypertension in the general population, it can be seen from the above figures that there is a far greater incidence in those individuals having attacks of coronary occlusion than there is in the population as a whole.

TABLE 2
INCIDENCE OF HYPERTENSION IN THE GENERAL POPULATION

Authors	Criteria	Cases	Per cent
Janeway	S. 165	....	11.0
Mayo Clinic	S. 160	3377	7.9
Frost and Knight	....	600,000	2.0

Master, Dack and Jaffee[12] have concluded that as a result of their statistical analysis of more than 800 cases of coronary occlusion, hypertension is an etiologic factor in coronary occlusion, for its incidence is definitely greater than that calculated for the general population. Furthermore they state that the unit attack ratio per hypertensive male was five to eight times greater than that for patients with normal blood pressure, although both ratios increased with age in the same proportion.

If we are to accept the fact that hypertension is an etiologic factor, there must be some explanation for the discrepancy that exists between the incidence of coronary occlusion in the two sexes.

The male sex is more often affected by coronary heart disease than is the female. The ratio of coronary occlusion in female and males is about one to four. The ratio of hypertension in females and males is about three to two. If hypertension is an etiologic factor *per se*, these figures must be explained.

TABLE 3
CORONARY OCCLUSION INCIDENCE IN THE TWO SEXES

Author	Cases	Male	Female
White and Jones	....	60%	40%
White and Bland	461	85%	15%
Parkinson and Bedford	83	72%	11%
Clawson	1215	82%	18%
Glendy, Levin and White	100	96%	4%

I have attempted to find some basis for the assumption that hypertension is an etiologic factor. I have reached the conclusion that there are only two means by which hypertension can produce coronary occlusion. The first is purely theoretical while some basis exists for the presence of the second.

(1). Hypertension of long standing is responsible for ventricular hypertrophy. This probably will serve to place greater demand on the coronary blood supply and at the same time cause a reduction in the calibre of the smaller arteries as a result of pressure from the neighboring hypertrophied myocardium. This process may proceed to the point where only the hypostatic pressure within the vessel will prevent the external pressure from causing a complete occlusion. A partial occlusion would exist and a condition would be present where as a result of decreased hydrostatic pressure (such as would occur in spinal anesthesia) the external pressure on the vessel being exerted by the myocardium could completely occlude the vessel and infarction would occur. This would be an example of coronary occlusion without thrombosis.

(2). The basic pathology upon which the vast majority of the cases of coronary occlusion occur is the presence of atheroma in the coronary arteries. Many investigators postulate that hypertension is a cause of atherosclerosis, and if this is true it will explain the means whereby hypertension serves as an etiologic agent.

Atheroma is a softening and a precursor of arteriosclerosis, with yellowish fatty areas in the endarterium. Fibrosis, thickening, and calcification ensue and the arteries become brittle. Hemorrhage from the rupture of minute vessels in the vascularized atherosclerotic walls of the diseased coronary arteries is thought by some to favor or precipitate coronary thrombosis.

Garfield Duncan[26] states that in the general population the sclerosis of the coronary arteries is five times more common in men than in women. Vander Veer observed that in the last 100 cases of infarction of the myocardium which resulted from coronary occlusion at the Pennsylvania Hospital, there were 81 men and 19 women, giving a ratio of four to one. Other investigators have arrived at approximately the same resulting ratio. This tends to show a definite correlation between the incidence of atherosclerosis and coronary occlusion.

Although hypertension and arteriosclerosis are frequently associated it is unlikely that the latter is the cause of the former. It is more plausible that prolonged hypertension is a factor in the sclerosis of arteries. It is known that with prolonged elevation of the blood pressure, sclerotic changes in the retinal vessels will become apparent.

The true cause of atheroma of the coronary arteries has not yet been discovered. Faulty cholesterol metabolism, local arterial strain, overwork of the heart and vascular system, hypertension, infection, allergy, endocrinopathy, and heredity are all possible factors but none of them have been proved causes. The incidence of association of hypertension and atherosclerosis has no real correlation as there is an inverse relationship between the two conditions in the two sexes, although there is in general an association.

I believe that prolonged hypertension with subsequent enlargement of the heart may possibly be a factor in the production of coronary occlusion, but the manner in which it is responsible is not known. Until this is discovered it cannot be stated that hypertension is a definite factor in the etiology of coronary occlusion.

BLOOD PRESSURE IN THE CLINICAL PICTURE

In a typical attack of coronary occlusion there is an initial rise in blood pressure. This transitory increase in blood pressure is rarely over 30 mm. of mercury systolic and is practically never over 60 mm. of mercury. The severe pain which occurs at the onset of the attack is believed to be responsible for this initial rise. Unless the patient is observed by the physician in the first hour or two following the occlusion, this transient rise is not detected as the blood pressure will have reversed and assumed a lower level. It is this drop in blood pressure that is characteristic of myocardial infarction.

The low blood pressure varying from 75 to 100 mm. of mercury systolic and 50 to 75 diastolic may continue for days, tending gradually to resume the former level that existed before the occlusion or a somewhat lower level. The explanation for the blood pressure drop is stated by Paul White[25a] to be the combined results of vasodilation, myocardial weakness, and bed rest. This explanation is certainly logical as any one of these factors is capable of lowering the blood pressure, and we must concede that all three are present in an attack of coronary occlusion.

Master, Dack, and Jaffee[10] analyzed the blood pressure changes in 538 cases of coronary occlusion in 1943. Their findings were not significant as they correlated with the clinical picture discribed in most writings on the subject, but the series serves as a basis upon which the conclusions as to the probable incidence and degree of blood pressure changes are present in any given number of cases.

In this series of 538 cases, the blood pressure fell to some extent in every case. A rapid fall was observed to be more common than a gradual drop in the pressure. Occasionally the fall did not occur until a week following the occlusion. In some cases it was observed that the initial fall was soon followed by a temporary or a permanent rise in the blood pressure. These investigators also found that the trend of the pressure was similar in the hypertensive and non-hypertensive groups, although they found that a rapid fall was more common among the non-hypertensive patients who died during an acute attack.

The systolic blood pressure rarely falls below 90 mm. of mercury in the hypertensive group but in the non-hypertensive group it is very common for the systolic pressure to go below this level. When the blood pressure falls below a systolic pressure of 80, the patient usually dies.

It is interesting to note that in Master's series 20 per cent of the patients with a previous pressure exceeding 200 mm. of mercury systolic did not have a fall below 150 mm. of mercury.

IMMEDIATE PROGNOSIS

The size of the infarct is directly responsible for the amount of drop in blood pressure. It has been proved experimentally in animals that the larger the infarcted area, the greater the decrease in cardiac output, therefore the greater the drop in blood pressure. White [25a] has observed that in patients having small and medium sized infarcts, the blood pressure is only slightly reduced; and this reduction is believed by him to be the result of bed rest.

Hoskin[4] has concluded as a result of analysis of coronary occlusion in private practice that a systolic blood pressure below 90 is an indication of a serious myocardial damage and a pressure below 80 practically always signifies a high mortality. Still many cases with a systolic pressure of 80 recover, but if the pressure continues to remain low the prognosis is very poor, and according to Hoskin the survival period is under two years in this event.

Levine [24b] states that in his cases, he has observed that a systolic pressure which was around 170 mm. of mercury before the attack, drops to about 110 mm. although this change takes places over a period of several days. Master's series in 1943 showed about the same degree of drop in pressure. In those individuals with a normal blood pressure the drop frequently reaches the low level of 80 mm. of mercury. It is in this latter group that the immediate prognosis is so bad, as the pulse pressure is greatly decreased and extreme shock is manifested. The prognosis in this group, whose pressure reaches a systolic level below 80 and a pulse pressure of 20 or less, is extremely poor.

I believe that with the same degree of

myocardial infarction in two given cases, one case having a previous hypertension and the second case having a previous normal blood pressure, there will be a proportional drop in the pressure in the two cases. The hypothetical evidence for this assumption lies in the circulatory dynamics necessary for the maintenance of blood pressure. Those factors which combine to maintain the normal blood pressure are: (a) pumping action of the heart; (b) peripheral resistance; (c) quantity of blood in the arterial system; (d) viscosity of the blood; (e) elasticity of the arterial walls.

Assuming that the last four of the above factors are not changed by the coronary occlusion and subsequent infarction, we will limit our explanation to factor number one, the pumping action of the heart.

The means by which the cardiac contraction exerts its effect upon the arterial blood pressure is through the quantity of blood which it is capable of discharging into the aorta in a unit period of time. Therefore the work of the heart depends chiefly upon the amount of blood ejected per minute against the mean pressure in the aorta. If the other factors already mentioned remain constant, the product of the pulse pressure and the heart rate may be used as an index of the energy of the pumping action of the heart.

In a hypothetical case of a patient who has a blood pressure of 180/92 the pulse pressure is 88. If the rate is 70, we have an index of $88 \times 70 = 6160$. In a second hypothetical case, the patient has a normal blood pressure of 120/80 and a pulse pressure of 40 the index is $40 \times 70 = 2800$. With myocardial infarction severe enough to reduce the ventricular contraction force by 30 per cent, there is a corresponding reduction in the minute volume. Since it is assumed that all other factors remain constant, the indices will likewise have a 30 per cent reduction. Therefore the resulting indices are 4050 and 1870, respectively. If the pulse rate increases to 100 per minute which it would do following occlusion, the pulse pressures in the two cases would be 40 and 19, respectively. Thus it can be seen that the drop in blood pressure is directly proportional to the previous standing pressure.

It has been observed by many investigators that the lower the blood pressure and pulse pressure, the greater the mortality in the acute cases. Therefore it appears to me that an antecedent hypertension offers a better prognosis than a previous normal pressure. This has not been substantiated by other writers, however. Master[12] concludes that hypertension does not affect the immediate prognosis, as the mortality rate in his series of 800 cases was about the same for hypertensive and non-hypertensive patients, in spite of a considerable increase in the incidence of cardiac enlargement in the former group. Couver and Holt, and Vander Veer and Brown also stated that they had not found any relationship between hypertension and the immediate mortality rate.

I have attempted to establish some reason why there should be no correlation between hypertension and a low mortality rate, as it has been seen that shock and death, as a result thereof, is less common in those patients with an initial hypertension. The explanation may lie in the fact that many people with coronary occlusion die of massive pulmonary edema weeks after the occlusion and these deaths are placed among those in the acute stage. The massive pulmonary edema is practically always predisposed to by the presence of a long standing hypertension.

Master has found a constant association between cardiac enlargement and heart failure. In his series[7] the heart was enlarged in 63 per cent of the patients. Evidence of cardiac insufficiency, usually of both ventricles was present in 90 per cent of the cases. Although dilatation must theoretically occur in a normal sized heart which becomes insufficient, six patients with heart failure following coronary occluson showed no clinical evidence of enlargement despite the presence of congestive failure. The incidence of enlargement in patients who developed congestive failure was 87 per cent. Only 20 per cent of patients who did not develop insufficiency had an enlarged heart. This investigator concluded that patients with coronary occlusion are much more prone to develop congestive heart failure when cardiac enlargement is present. Thus it may be seen that hypertension can indirectly be responsible for failure, as it is the most frequent cause of cardiac enlargement.

ULTIMATE PROGNOSIS

To determine the prognosis in the individual case at the time of the attack may be most difficult. There is an impression that the prognosis depends in part on the severity of the initial manifestations and this is probably true. The size of the cardiac infarct is of great importance because the future efficiency of the heart depends on the extent of the infarct and the integrity of the remaining muscle.

The presence of hypertension following recovery from coronary occlusion certainly tends to make the future prognosis poor. I do not believe that high pressures will predispose a person to more attacks than would be expected in a non-hypertensive individual who has recovered from the first occlusion. The hypertension will probably tend to increase the work of the already damaged heart to such an extent that some insufficiency will occur. In the event of a second occlusion, there would be little reserve for the heart and a rapid congestive failure would be more likely.

Palmer[15] in 1937 charted the blood pressure reading of 61 patients who had coronary occlusion. The blood pressure, previous to the attack as well as blood pressure each year subsequent to the attack, was recorded.

In analyzing these 66 cases of coronary occlusion, I have found that among 19 deaths that occurred in the six years following the first attack, eight were due to subsequent attacks of coronary occlusion. Of the 19 deaths, 17 exhibited hypertension with a systolic pressure greater than 160 or a diastolic pressure more than 100. All eight of the patients who died of subsequent attacks of coronary occlusion had a previous hypertension. There were 22 subsequent attacks of coronary occlusion in the 66 cases, and as stated before eight deaths resulted. Of these 22 subsequent attacks nine had normal blood pressures. Only one patient with a normal blood pressure died as a result of a subsequent attack of coronary occlusion as compared to seven who had hypertension.

TABLE 4

INCIDENCE OF ATTACKS OF CORONARY OCCLUSION, HYPERTENSION, AND DEATH IN 66 PATIENTS WHO WERE FOLLOWED FOR SIX YEARS AFTER RECOVERING FROM THEIR INITIAL ATTACK OF CORONARY THROMBOSIS (FROM PALMER)

Years Following Attack	1	2	3	4	5	6	Total
Deaths	5	3	5	2	1	3	19
a) With hypertension	5	3	5	1	1	2	17
b) Due to coronary occlusion	2	2	2	1	0	1	8
Subsequent Coronary Occlusion	9	5	3	3	1	1	22
a) Deaths	2	2	2	1	0	1	8
b) With hypertension	5	2	1	0	1	0	9
Coronary Deaths	2	2	2	1	0	1	8
With Hypertension	2	2	2	1	0	1	8

In view of the evidence we are obliged to assume that hypertension definitely is a menace to life in those patients who have had a previous coronary occlusion.

SUMMARY

1. I have attempted to correlate blood pressure and coronary occlusion as to (a) etiology; (c) clinical picture; (c) immediate prognosis; (d) ultimate prognosis.

2. Hypertension is found to be present in 25 to 75 per cent of patients who have attacks of coronary occlusion, but is not believed to be an etiologic factor in its production as it has been shown that there is a discrepancy between the incidence of occlusion and hypertension in the two sexes which is unexplainable. Although hypertension is a frequent association of coronary occlusion, there are no grounds for placing it as an etiologic factor.

3. The blood pressure probably gives the best indication of the immediate prognosis, very low systolic readings and very small pulse pressures being most ominous. In the first attack, a previous hypertension offers a better immediate prognosis, as the blood pressure is less apt to fall to shock levels.

4. The ultimate prognosis is much worse in those individuals having hypertension, as the damaged myocardium is incapable of keeping up the heart output and the minute volume is decreased. With the development of a second occlusion the already hyper-

trophied and greatly damaged myocardium is more prone to develop massive pulmonary edema.

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AN INTERESTING OBSTETRICAL CASE REPORT*

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This is a case which seems of unusual interest primarily because it is representative of a group of patients who are surviving today, whereas before the discovery and use of the sulfonamides and penicillin these same women would have surely expired.

This case occurred on the Independent obstetrical service of Charity Hospital. The patient was a 37 year old colored female, gravida IV, para VII, who was admitted to the delivery unit about eight p. m. on January 20, 1945. The previous obstetrical history was essentially negative with the exception of a septic early abortion in January, 1944. At this time a suspicious looking cervix was biopsied and reported as "necrosis and acute inflammatory reaction." Suggested bacteriologic studies of the cervix were, for some reason, not done. On admission a history was obtained of the membranes having ruptured 32 hours prior to hospital entry with the onset of abdominal pain and fever on the afternoon of admission. No pains had been experienced for several hours. There was no history of vaginal or other examinations before entry.

Physical examination revealed an obese colored female with a temperature of 103.6°. The blood pressure was 125/80 and the heart and lungs were clear to percussion and auscultation. On abdominal examination the uterus was found enlarged to the size of an eight months' pregnancy and was moderately tense with no intermittent contractions. No fetal heart tones were heard. Pelvic examination revealed a breech presentation, the breech lying above the pelvic inlet and the membranes ruptured. The cervix was 4 cm. dilated and thin, but rigid. Effacement was complete. A foul discharge came from the uterine cavity. The pelvis was adequate.

Laboratory work showed: Red blood cells, 4,450,000; hemoglobin, 10 grams;

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*Read before the Orleans Parish Medical Society, May 14, 1945.

white blood cells, 8,700; polys. 92, 1 monocyte, 7 lymphocytes; BUN 15.4 mgm. per cent; urine negative; Kline and Kolmer were strongly positive.

During the night sulfadiazine and penicillin (12,500 Oxford units q three hours) were begun and a medical induction with pitocin given. The following morning at eight the temperature reached 105.2°. Reexamination showed that no progress had been made as was suspected from the absence of any palpable uterine contractions. The uterus, however, remained tense.

Abdominal delivery was elected and at 4 p. m., approximately 20 hours after admission, a subtotal hysterectomy, removing a stillborn fetus *in utero* along with both tubes and ovaries, was done, using cyclopropane supplemented with ether anesthesia. Upon opening the peritoneal cavity a rather large amount of thick purulent material exuded and a pool of the material was present in the cul-de-sac. A fibrino-purulent exudate was present on the surface of the fallopian tubes. Sulfanilimide crystals were left beneath the bladder flap and in the free peritoneal cavity and a drain left beneath the fascia which was closed with non-absorbable sutures. The blood pressure fell to a systolic level of 60 during the procedure and a total of 2000 c.c. of type specific blood was given. At the end of four hours the pressure was 80/40 and the pulse was 116 and of fair quality.

On the first postoperative day she remained afebrile for 24 hours. The temperature spiked to 103° rectally on the second day and gradually subsided, not exceeding 99.6° from the sixth to the twelfth day and remaining normal thereafter until she was discharged on the twentieth postoperative day.

Pathology report: Gravid uterus with attached normal placenta and umbilical cord; acute suppurative and chronic endometritis; acute suppurative salpingitis and perisalpingitis; acute suppurative perisalpingeal pylephlebitis; corpus luteum, follicular cysts and corpora albicantia of ovaries.

Blood culture on April 21, 1945, was negative. Culture from peritoneal cavity showed *Staphylococcus aureus* pyogenes and non-hemolytic streptococcus. A culture taken from the cervix during convalescence grew an anaerobic streptococcus.

DISCUSSION

Dr. Adolph Jacobs (New Orleans): Having occurred in the independent service, Dr. Callender consulted me regarding this case. Usually we get in communication with the residents by telephone. I must say now that we are fortunate during this emergency to have capable residents because it is almost impossible for us to go very often to the hospital, particularly at night when we ourselves need rest. In this instance Dr. Callender asked me—although he consulted me frequently over the telephone and I would agree with him about the procedure—he asked that I see the case. We were faced with a real problem there. Because of the history we realized the infection evidently occurred in the cervix and was a latent infection. The fetus was not macerated and evidently the flare-up occurred only a short period prior to admission of the patient to the hospital. Having been convinced that the fetus was dead, it was a problem as to procedure. Now before the advent of penicillin and the sulfa drugs we may have been tempted to do something from below and in this case that would have been fatal. The cervix was high and rigid. I think a great deal of credit is due to Dr. Callender for the way he handled this case from the very beginning; giving the patient penicillin and sulfa drugs prior to the cesarean section.

Dr. Woodard Davis Beacham (New Orleans): Dr. Callender discussed this case with me after the paper had been written. He commented on the fact that the dosage of penicillin was rather small. That can be explained on the basis that penicillin was not as easily obtainable then, as it is at the present time. It is our opinion that cases of this type should receive a large initial dose of penicillin. As a matter of fact, we suggest that such cases receive ordinarily 50,000 Oxford units as the initial dose. The chemotherapeutic agent may be administered intravenously, or intravenously and intramuscularly. Thereafter the penicillin should be given intramuscularly at intervals of three or four hours in doses of 25,000 Oxford units. The management of this case was entirely correct. If a Watters' extraperitoneal section had been done the peritonitis could not have been combatted as efficiently as it was in this instance.

All of us appreciate the advisability of employing sulfonamides in addition to penicillin in these cases; appreciating the fact that some organisms are resistant to penicillin and responsive to sulfonamides and vice versa.

I wish to compliment the chiefs of the Independent Obstetric Service, Dr. Jacobs, and Dr. Callender, for saving a patient who could have very easily been an obstetrical mortality. Proper antenatal care has as one of its aims the prevention of complications of this type. If this patient had been admitted to the hospital earlier, it is probable that she would not have lost her uterus, and with good antenatal care, her baby would have been saved.

THE VALUE OF INFLUENZA VACCINATION

MITCHELL EDE, M. D.
NEW ORLEANS

Since R. E. Shope in 1931 established the fact that a filtrable virus is the essential factor in the production and transmission of the disease influenza, many workers have sought to find an efficacious vaccine to prevent future epidemics of influenza. The results of these studies have been conflicting and inconclusive. The object of this paper is to review the work which has been accomplished and, if possible, to derive some definite conclusions as to the value of the vaccines prepared to date.

VACCINES

The strains of influenza virus used in preparing the vaccines were the PR 8 strain, the Melbourne strain isolated in 1935, the W.S. strain which was isolated by Smith and Laidlow in 1933, and the Lee strain of influenza virus Type B isolated in 1940. The above strains were tested singly in a vaccine and in combination with each other by the different researchers.

PREPARATION

The virus was grown on tissue culture medium and in mouse lungs before 1940. Since 1940 the virus used for vaccine has been grown on the chorio allantoic membrane or in the allantoic fluid of the developing chick embryo. Those chick embryos of 10-12 days' age were considered to be the optimum ones to use. The virus following cultivation was used in one of two ways:

1. As active attentuated virus
    a. Unconcentrated
    b. Concentrated *or*
2. As inactivated virus
    a. Unconcentrated
    b. Concentrated

Formalin was used to inactivate the virus. A number of methods have been developed to concentrate the virus but only that developed by Hirst and co-workers will be described because this method, in my opinion, is the best. By this method a ten-fold[1] concentration of virus can be obtained. The procedure is as follows:

One liter of frozen allantoic fluid containing the virus desired is carefully thawed. A precipitate is formed which carries down with it 90-95 per cent of the virus. This precipitate is removed by centrifugation at 1000 r.p.m. for 10 minutes. The temperature of the fluid does not rise appreciably above 0° during this procedure. The sediment is then resuspended in 100 c.c. of the supernatant fluid and this gives a ten-fold concentration. The virus can then be inactivated by the addition of formalin.

The usual procedure for attenuating the virus was by animal passage. The ferret was used. Also passage through chick embryo was found to reduce the pathogenicity of the virus.

WHICH MODE OF PREPARING THE VACCINES AS MENTIONED ABOVE IS BEST

Hirst, Rickard, Whitman, and Horsfall[2] experimented with the various preparations and reached the conclusions: 1. "Within certain limits the mean antibody response of human beings increased as the amount of virus injected was increased. When large amounts of influenza virus were given, the antibody response was of the same order of magnitude as that which occurred following actual infection by this virus." This would indicate that the concentrated forms of vaccine would produce better results than the unconcentrated ones. 2. "There was no significant difference in the antibody response of human being given active virus or inactivated virus as long as both types had approximately the same number of virus."

The above results may explain the failure of vaccines used by individuals when the vaccine used was not concentrated.

CORRELATION BETWEEN NEUTRALIZING ANTIBODIES IN SERUM AGAINST INFLUENZA VIRUSES AND SUSCEPTIBILITY TO INFLUENZA IN MAN

Before proceeding further, the correlation between neutralizing antibodies in the serum and susceptibility to influenza in man should be mentioned in order to clarify the following discussion and to make its understanding easier for the reader.

In many of the experiments the level of antibody in the serum was used as the measure of value of the vaccine by the researchers because it was a method which was practical. By studying the serum level it would be possible to follow the effects of the vaccine. They found that a rise in the antibody level did occur following vaccination and the question then arose that if the efficacy of the vaccine was to be determined by the height and duration of rise of the antibody level in the serum, then what was the correlation between high serum levels of antibody and immunity to influenza.

In work done by Rickard and co-workers[3] it was shown that during an epidemic that the attack rate was higher among those individuals who had low levels of antibody in their serum. The same workers[4] showed that the level of neutralizing antibodies in the serum against the homologous virus is an important factor in determining susceptibility or resistance to the disease. They showed that high levels of antibody against influenza virus Type A would protect against Type A virus but did not afford any protection to influenza virus Type B and this in itself is proof that the circulating antibodies do play a part in immunity.

That neutralizing antibody is not the only factor responsible for determining whether the individual will contract the disease is evident in view of the fact that persons possessing high antibody levels do contract the disease. However, the attack rate is lower among these individuals than among those with lower antibody levels in serum.

The fact that those with high antibody level in the serum still contract the disease may be accounted for by two factors which play a part in immunity. (1) The anatomy of the upper respiratory tract in these individuals may be such as to prevent intimate contact between virus and circulating antibodies. (2) Since influenza is assumed to be transmitted from one person to another by means of virus-containing droplets, it is reasonable to conceive that individual exposure in an epidemic may be variable and one person may come in contact with small quantities of the virus and another may inhale a large amount.

From the above it may be concluded that there is a positive correlation between the level of the antibody in the serum and the susceptibility of the individual to the disease. But the correlation is not absolute for the antibody level is only one of many factors entering the picture. For practical purposes, however, I think we can use the level of antibody response to a vaccine as a measure of the efficacy of the vaccine. The level is probably the most significant single factor determining whether infection does or does not occur. A disturbing and as yet little studied and unexplained fact is the fact that influenza of unknown cause appears to occur with somewhat increased frequency among individuals who possess considerable concentration of antibodies against both known influenza viruses.

SPECIFICITY OF ANTIBODY RESPONSE OF HUMAN BEING TO STRAINS OF INFLUENZA VIRUS

As mentioned above in discussing correlation between antibody level and susceptibility of the individual, high antibody levels against influenza A virus do not diminish the frequency of influenza B; nor do high antibody[5] levels against influenza B virus reduce the incidence of influenza A.

Bodily and Eaton vaccinated individuals with influenza Type A virus and later tested their sera against the various strains of human influenza (PR 8, Melbourne, W.S.) and swine influenza—an increase in antibodies of four-fold or over to PR 8 occurred in 61.6 per cent, to Melbourne in 71.1 per cent, to W.S. in 34.4 per cent and to swine in 30.7 per cent. This would indicate that the immune response was apparently not broad enough to produce significant antibody increases to W.S. and swine influenza. This would also indicate that there was almost complete reciprocal cross immunity in human sera between PR 8 and Melbourne strains. However, this is not entirely true for there was a certain amount of specificity in the antibody response as was demonstrated by experiment with the two strains. Fifteen persons vaccinated with Melbourne virus showed a better reactivity against

Melbourne strain than against PR 8, as indicated by agglutinative or mouse neutralization tests. On the other hand, sera of 25 persons vaccinated with PR 8 virus vaccine showed a greater reactivity against PR 8 by mouse neutralization tests and agglutinative tests than to the Melbourne strain. The fact that both PR 8 and Melbourne type antibodies were increased as much as they were when the influenza virus A isolated from the 1940 epidemic was used to vaccinate the people may be explained by the fact that this vaccine possessed antigenic components common to these strains.

These findings indicate that immune response of human beings to strains of type A influenza virus is not sufficiently broad to guarantee protection against infection with all viruses within the type A group when one strain is used in the vaccine.

METHODS OF ADMINISTRATION

The two main methods of administering the vaccination have been by the intranasal and subcutaneous routes. Most of the work done with the intranasal method has been carried on by Australian workers, while the workers in this country have advocated subcutaneous vaccination.

EXPERIMENTAL RESULTS WITH INTRANASAL VACCINE

D. R. Bull and F. M. Burnet,[6] using 107 soldiers as subjects, vaccinated them by the intranasal method with a vaccine consisting of the Melbourne and W. S. strains. Following the vaccination they found that for each type of virus, from 68 to 80 per cent of the subjects showed no significant change in antibody level. Twenty to 30 per cent showed an increase in antibody level. Also, those having lower initial antibody level showed a higher rise in antibody level. Taken at face value these results appear to be inferior to those obtained by American workers with subcutaneous inoculations of adequately high titer of virus. Bull and Burnet held that it must be remembered that the intranasal vaccine can be expected to "take" only in those subjects who are susceptible to influenza virus infection. for in the great pandemic of 1918 about 70 per cent of persons escaped clinical infection. Therefore even with an ideal vaccine of this type you would not expect more than 30 to 50 per cent of subjects to show a definite rise in antibody level against any one type. They maintain that the existence of a real resistance in some persons to infection by attentuated strains is strikingly shown by the failure in most instances of repeated re-inoculations to provoke a rise in antibody level in those subjects who fail to respond with such a rise to the first inoculations. In substantiation of this statement the following experiments are given.

D. R. Bull and F. M. Burnet[7] experimented on 23 individuals chosen for low antibody titer against influenza Type B and vaccinated with Type B. Twenty-one of the 23 showed a significant rise in antibody level. Only two showed a significant rise following the second administration three to six months later. They hold that this represents a real resistance to infection induced by this procedure. In another experiment 14 subjects with antibody level between 35 and 90, 12 of whom in response to the first inoculation showed significant rises; of 11 in the same range (35-90) inoculated for the second time, two only showed significant rises. The reasonable deduction is that the experience of one inoculation has produced a resistance by one mechanism or other greater than would be gauged from a consideration of Hirst antibody levels alone, and this resistance is great enough to produce immunity.

J. Mawson and C. Swan[8] claim that the use of living, attenuated influenza virus strain intranasally gives as good results as does subcutaneous injection of the virus. However, Hirst, using a ten-fold concentration of virus[9] produced a six-fold rise in antibody level using subcutaneous vaccination while Mawson and Swan got only a two-fold rise with intranasal vaccination. However, Mawson and Swan consider that there is a possibility that the resultant mild infection of nasal tissues will lead to an increase in local resistance not obtained by subcutaneous injection. The value of this intranasal vaccination must yet stand trial in an epidemic. Until such a time, when the vaccine can be given in or before the spread of an epidemic, no definite evaluation can be made.

UNFAVORABLE EVIDENCE OF VALUE OF INTRANASAL VACCINATION

T. Francis, Jr.,[10] infected 30 individuals with influenza Type B by placing the individuals in a room in which the virus had been finely dispersed. Twenty-four of them came down with a clinical infection resembling a mild form of the disease. Four months later 24 of the same subjects received a second inhalation of the same virus. Fever, symptoms and serologic responses were noted for a second time. Although the illness was milder in those previously infected than in controls inoculated at the same time, few of those previously infected were refractory to inoculation. The question arises, if frank infection fails to give a uniform staunch resistance over a period of four months, can a single exposure to a much milder single stimulus by the same route have a greater effect. This hardly seems likely. From this study the suggestion is derived that for intranasal vaccination to be effective it should be repeated at intervals shorter than four months.

As mentioned above, Bull and Burnet consider the failure to show a rise of antibody level on re-inoculation as evidence of real resistance to infection. Francis disagrees and holds it in doubtful significance as he says an increase in antibody after re-inoculation may not occur even with sharp clinical response.

At the present it may be said that the value of intranasal vaccination is questionable and uncertain. It must be evaluated in the light of its ability during an epidemic. In the face of the work of Francis it can hardly be expected to produce an immunity of longer than three months. We do know that it does cause a rise of antibody level which is of a significant amount for at least three weeks. The intranasal vaccination does have certain advantages: (1) It causes trivial symptoms, and (2) it is simple to prepare—it can be made more rapidly and requires less time, skilled man power and material and in the face of an epidemic this would be very important.

HISTORY

In 1933, Smith, Andrewes, and Laidlow[11] obtained a virus from an influenza patient. Following this association of a virus with influenza, work was begun in hope of obtaining a vaccine which would afford protection from this disease. Experimental work on animals by the same authors[12] showed that ferrets following infection were resistant to reinfection by artificial inoculation of the virus into their respiratory tract. Francis and Magill[13] confirmed this work. In 1936 and 1937 Francis and Magill[14] further showed that the subcutaneous injection of active influenza cultivated on tissue culture medium produced a rise in antibody response in humans. The circulating antibodies persisted for five months at a higher level than was initially present before vaccination but it was highest two weeks following vaccination.

The first experiment which gave any light on the protective effect of vaccination against influenza in man was reported in 1937. First, Stokes, Chenowith, Waltz, Gladen, and Shaw[15] and later, Stokes, McGuiness, Langner, and Shaw[16] conducted experiments using active culture virus. It was found that the incidence of the disease was lower among those who had received subcutaneous vaccination than among the controls. The latter group of workers found that in those groups who were vaccinated a short time before the epidemic occurred showed a lower attack rate than in those groups vaccinated a longer time before the epidemic.

Unfavorable results were obtained by Smith, Andrewes, and Stuart-Harris[17] following vaccination of several groups of individuals with a formaldehyde inactivated virus prepared from infected mouse lungs. A true evaluation of the vaccine could not be made because of the appearance of an epidemic a few days after vaccination. They found though that there was no essential difference between the attack rate among those vaccinated and not vaccinated, who developed influenza two weeks after vaccination. However, the same strain of virus isolated in the epidemic was not antigenically identical with the virus in the vaccine. This accounts for the failure in this case for it was shown as mentioned above by Bodily and Eaton that there was a specificity of antibody response in human beings to strains of influenza virus.

R. M. Taylor and M. Dreguss[18] carried out an experiment in 1937 using the same type vaccine as that used by Smith, Andrews and Stuart-Harris. They vaccinated 306 persons with a formaldehyde inactivated influenza virus. Their results were also disappointing as the attack rate among the vaccinated was not appreciably lower than the attack rate among the controls. The epidemic occurred 17 days after vaccination which, had the vaccine been of value, would have been the period when the antibody level of the blood was highest. The authors offered two reasons for the apparent ineffectiveness of the vaccine. First, whether one injection of the virus preparation is sufficient to increase adequately resistance to natural infection, even against a virus strain which is antigenically identical to the one used in the vaccine. Second, the antigenic difference between the virus used in the vaccine and the viruses responsible for the epidemic may have been different.

In the epidemic of influenza A in 1939, the formalinized W.S. virus vaccine again failed to give protection.[19] Siegel and workers[20] also found that the formalinized virus grown on tissue culture afforded little protection. "The vaccine was given three months before the epidemic. The results were considered inconclusive because there was serological evidence of the prevalence of influenza A and other unrelated acute infections of the upper respiratory tract which were clinically indistinguishable."

From the above data it can be seen that before 1940 the clinical trials in which either formalin-inactivated, active mouse-lung virus, or active tissue culture virus were employed, the incidence of clinical influenza was not significantly different in those receiving subcutaneous vaccination and those not vaccinated.

CLINICAL RESULTS OF 1940-1941 EPIDEMIC

In the following 1940-41 epidemic, the vaccine used for the most part was the complex vaccine of Horsfall and Lennette, which consisted of formalin-inactivated PR 8 strain of influenza A virus and canine distemper X virus propagated simultaneously in the developing chick embryo.[21] Clinical tests of its prophylactic value during the 1940-41 epidemic were made and the results have been conflicting.

During the 1940-41 epidemic of influenza A in this country, a number of researches were carried out. W. P. Martin and M. D. Eaton[22] took a complex formalinized ground chick embryo vaccine containing canine distemper and influenza A virus and another vaccine made from active influenza A strain Melbourne in chick embryo suspended in saline and used these two vaccines prophylactically during a recent influenza outbreak in two institutions. The active tissue culture vaccine is called V-1 and the complex inactive vaccine V-2. Table 1 gives the results. The epidemic occurred within two weeks following vaccination.

TABLE 1

	Institution X			Institution Y		
	Total in Group	Total Cases	Incidence Per Cent	Total in Group	Total Cases	Incidence Per Cent
Vaccine 1	193	16	8.3	169	10	5.9
Vaccine 2	223	12	5.4	244	18	7.4
Total vaccinated	416	28	6.7	413	28	6.8
Controls	4560	365	8.0	2487	385	15.5

It can be seen from Table 1 that at Institution Y that the difference in incidence of cases between the vaccinated and control groups is sufficiently great to be of some significance especially since the incidence of influenza A was high in this institution. The failure of V-2 to give adequate protection can be attributed to the short lapse of time between vaccination and peak of the epidemic. The failure of V-1 to produce some immunity in Institution X is unexplained.

Brown and Eaton, using a ground chick embryo vaccine, reported during the epidemic of 1940-41 a reduction in attack rate of 50 and 60 per cent in two hospital groups. The significant factor brought forth by the last two mentioned experiments is that these favorable results were obtained in epidemics which occurred shortly after vaccination was performed.

Contrary to the favorable reports given above, work carried on in New York by Dolldorf and co-workers,[23] using the same type vaccine, showed no significant difference in the incidence of clinical influenza and influenza A among vaccinated and non-vaccinated individuals. Seventy-five per cent of their cases had serologic reports and 70 per cent were positive for influenza A. There was no evidence of influenza B.

The results of Dolldorf were supported by the results of Siegel and co-workers[24] who, using the same vaccine employed in studies at Letchworth Village, failed to reduce the incidence of respiratory illnesses serologically related to influenza A in the epidemic of January-February, 1941.

The last two experiments had an interval of six and eight weeks, respectively, between vaccination and epidemic which may be the factor responsible for the failure. In those experiments using the same vaccine in which the interval was short, the vaccine proved of value in producing immunity.

Horsfall and co-workers[25] used the same preparation. They reported a series in which the interval between the vaccination and the epidemic was four months. They obtained an attack rate reduction of 25 per cent on a clinical basis. The results cannot be used upon which to draw definite conclusions because the results in individual institutions showed such enormous variations, well beyond the sampling error.

Hirst and co-workers showed that the greater the number of virus the vaccine contained the greater would be the antibody response in the vaccinated individual. This lead the researchers next to the use of concentrated vaccines. That described by Hirst and mentioned early in this paper is only one of a number of methods for concentrating the virus but a description of other methods is beyond the scope of this paper.

DETERMINATION OF THE EFFICACY OF SUBCUTANEOUS VACCINATION IN PREVENTING EXPERIMENTAL INFECTION OF HUMAN BEINGS

In the absence of an influenza epidemic in 1941-42 and 1942-43, a group of new vaccines which contained influenza virus, concentrated and inactivated were treated by artificial experimental infection of human beings. Smorodintseff and co-workers[26] have shown in a number of human volunteers that inhalation of active influenza A virus may lead to disease. It was hoped that similar inhalation experiments performed on vaccinated and non-vaccinated human beings could give some additional information about the value of these vaccines.

Henle and co-workers[27] used a vaccine which consisted of an equal mixture of allantoic fluids infected with PR 8, W.S., and Melbourne strains of influenza virus A. The virus was inactivated by formalin; 72 individuals were used as subjects; 28 were used as controls and not vaccinated; 27 were vaccinated four months before exposure to the virus; 17 were vaccinated two and a half weeks before exposure. The subjects were exposed in a room to active influenza A virus which they inhaled. Of 28 control individuals, 10 came down with clinical influenza. Only one case which had not responded to vaccination occurred among the 44 vaccinated persons, 27 of whom had been immunized four months prior to exposure. There were, however, numerous subclinical cases in the experiment. A good correlation between the pre-inhalation antibody level and the degree of protection is indicated in that most cases occurred in the group with the lowest antibody titer.

Henle's experiment indicated that the concentrated inactivated vaccine induced an effective immunity four months later. This length of immunity had not been produced before and the report stands out as the results of this vaccine were remarkably effective.

As in 1941-42, no epidemic of influenza occurred in 1942-43. Francis and co-workers[28] had made rather extensive studies for the purpose of determining the value of subcutaneous vaccination with inactivated concentrated influenza virus against the natural disease in man. The anticipated outbreak of influenza however did not occur but they had the opportunity to test the resistance of certain of the vaccinated individuals to induced infection.

In their experiment they used a vaccine containing the PR 8 strain of influenza virus A and the Lee strain of influenza virus B. The virus was concentrated and inactivated. The subjects were 102 individuals. On December 21, 1942, 45 received 1.0 c.c. of the vaccine subcutaneously. On April 21, 1943, 17 of these men again received 1.0 c.c. of the vaccine as did 21 men not previously vaccinated. There remained 28 men who had been vaccinated four months earlier and 36 individuals who had not received the vaccination. On May 4, 1943, 13 days after the last administration of vaccine, the entire group received an intranasal spray of Type A influenza virus in allantoic fluid.

It was found upon analysis of the results that temperatures of 100° or more were observed in 50 per cent of the controls, in 32 per cent of those vaccinated four and a half months before exposure, in 14.3 per cent of those vaccinated two weeks before and in 17.6 per cent of those vaccinated four and a half months and two weeks before. None of those vaccinated two weeks before infection had temperatures higher than 100° while nine of the control and three of the men vaccinated four and a half months earlier had fever of 101° or higher. The results indicate that the vaccine employed induced a state of resistance, manifested in reduced febrile responses, to intranasal infection with influenza virus Type A. It was most effective in those vaccinated two weeks before exposure. The protective influence of vaccination declined considerably four months later. This experiment agrees with that of Henle described above in showing that subcutaneous vaccination clearly exerts a beneficial influence against induced infection with influenza virus, Type A. It differs in showing effective immunity was considerably reduced four months later. Francis believes that the virus Henle and co-workers used was not as virulent as the one he used and that in the face of an epidemic many of the cases they reported as subclinical would be clinical cases.

Salk and co-workers[29] performed essentially the same experiment as that described by Francis above, except they exposed the individuals to influenza Type B instead of Type A. They found that this vaccine containing concentrated and inactivated influenza virus Type A and B was capable of exerting a protective influence, as measured by febrile response, against induced infection of Type B influenza for at least four months.

RESULTS OF EXPERIMENTAL WORK DURING EPIDEMIC 1943-1944

In the autumn of 1943 the members of the Commission on Influenza and associates with T. Francis, Jr., as director, carried out a controlled clinical trial[30] to determine the prophylactic efficacy against epidemic influenza of a concentrated inactivated vaccine containing the viruses of influenza Types A and B. It had already been shown by the last two preceding experiments described above that a vaccine similarly prepared was capable of furnishing definite protection against experimental induction of influenza A or B. The vaccine consisted of the PR 8 and Weiss strain of influenza virus Type A and the Lee strain of Type B. They used control material consisting of isotonic solution of sodium chloride to which formaldehyde was added. The subjects were members of ASTP units in eight universities over the country and a ninth unit comprising members of the ASTP units of five New York medical and dental colleges. Each unit was divided in half so that one-half received the vaccination and one-half the control material. The following Table 2 shows the results:

TABLE 2

Total Number	No. of Subjects Vaccinated	Control	No. of Cases Vaccinated	Control	Incidence Per Cent Vaccinated	Control	Per Cent Total Cases Vaccinated	Control
12,474	6263	6211	138	442	2.22	7.11	23.8	76.2

It is seen that the incidence of clinical influenza in 6211 men receiving control material was 7.11 per cent, while in the 6,263 receiving vaccine there was an incidence of 2.22 per cent, a ratio of 3.2 to 1. The significance of the results is heightened by the uniformity of trend in practically every unit.

The difference between vaccinated and control individuals was greatest at the height of the epidemic curve. Before the epidemic reached its peak and following the peak the difference between the two groups was less.

That the vaccine becomes effective about one week after inoculation is well illustrated in the results reported from the University of Iowa and the College of the City of New York. In these units the vaccine was given after the epidemic started. The attack rates were not different very much during the first week after vaccination but then it diverged sharply.

TABLE 3

University of Iowa

Epidemic: Nov. 29, 1943
Dec. 25, 1943
Vaccination: Dec. 2-4, 1943
Number in study:

Vaccinated	599
Control	599
Total	1198

Cases by weeks ending

	Vaccinated	Control
Dec. 11	3	12
Dec. 18	2	16
Dec. 25	4	11
Jan. 1	2	1
Total Cases	11	40
Incidence Per Cent	1.83	6.67
Per Cent of Total Cases	21	79

C. C. N. Y.

Epidemic: Nov. 7, 1943
Dec. 18, 1943
Vaccination: Nov. 19, 1943
Number in study:

Vaccinated	1050
Control	1055
Total	2105

Cases by weeks ending

	Vaccinated	Control
Nov. 11	33	27
Dec. 4	8	52
Dec. 11	6	17
Dec. 18	0	6
Total Cases	14	75
Incidence Per Cent	1.33	7.11
Per Cent of Total Cases	16	84

It may be said from the results that if the vaccine is given a short time before or after the epidemic has started it will afford protection as seen by the fact that the attack was 2.22 among those vaccinated and 7.11 among the controls. The vaccination produced its maximum effect at the height of the epidemic.

This experiment gives us no information as to the duration of the protective value of the vaccine.

Studies in human immunization with a similar vaccine as used by the Commission were conducted by Hirst, Rickard and Friedewald.[31] They reported the results of a study of the efficacy of this vaccine when the period between vaccination and epidemic was about one year. Since the report of the Commission gave no indication of the duration of immunity with this concentrated, inactivated vaccine, the report of Hirst, Rickard and Friedewald may be considered as an extension to their observations.

The vaccine used consisted of PR 8 strain of influenza A and the Lee strain of influenza B. In one institution, the vaccine was made with the PR 8 and W.S. strain of influenza A only. The vaccine was concentrated and inactivated. The subjects were taken from seven penal institutions in widely separated states. Only those who volunteered were vaccinated and the rest were used as controls. Vaccination was given in November and December of 1942 and no epidemic occurred until the winter of 1943. This gave an interval of from 11 to 14 months between vaccination and epidemic. Serologic tests were run on the individuals so that the antibody level in the blood could be followed. Among the 2945 vaccinated, the attack rate was 3.6, while among the 4451 the attack rate was 5.5, a difference of 35 per cent. In all seven institutions, the attack rate was consistently lower among the vaccinated than in the controls. They found on serological examination that the vaccination resulted in a high order of antibody response within two weeks after injection which declined rapidly by the sixth and seventh week but then persisted at a low level for a year. At one year the great majority of individuals vaccinated had antibody levels much higher than their pre-vaccination titer. The average reduction in attack rate was about 35 per cent.

However, the protection afforded by the vaccine after two months' lapse of time cannot be considered sufficient for practical purposes for the number of vaccinated individuals who contracted influenza after one year was still too high.

SUMMARY

The object of this paper was to determine the value of the influenza vaccination. A review of the literature was made in an attempt to determine whether vaccines were of practical significance in the field of preventive medicine. The widespread realization of the danger and destruction which was wrought by the great pandemic of 1918 has lead many workers to search for a vaccine which would provide men with an adequate weapon to fight off such a recurrence. Many workers in Australia, England, and the U. S. have devoted much time in intensive research, in developing and testing different vaccine preparations, discarding old ones, preparing new ones, ever looking for one which would stand up in the face of a virulent attack of the influenza virus. This paper brings you in a brief form the search, the toil, the trials, failures, and successes of these workers.

As mentioned above many vaccines have been prepared in many forms and they contained different strains of influenza virus. The different strains used for the most part were the PR 8 strain, the Melbourne strain, the W.S. strain of Type A virus and the Lee strain of Type B virus. The vaccine was used in either inactivated or attenuated form—concentrated or unconcentrated.

In many of the experiments the workers determined the efficacy of the vaccine by the height and the duration of rise of the antibody level in the serum because it was shown that there was a positive correlation between the level of the antibody titer in the serum and the susceptibility of the individual to the disease. Although the correlation is not absolute, it can still be used for it was proved that the level is the most significant single factor determining whether infection does or does not occur.

An important step in the advance to find a good vaccine was the illustration of the specificity of antibody response of human beings to the different strains of influenza virus. From this it may be reasoned that, to prepare a vaccine which would afford protection against all strains of the influenza virus, the vaccine would have to contain the many strains.

In 1936 and 1937 experimental work showed that the subcutaneous injection of active influenza virus cultivated on tissue culture medium produced a rise in antibody response in humans which lasted for five months. This type vaccine, which was an active attenuated one grown on the tissue culture medium, was first tested in the face of an epidemic in 1936-1937 by Stokes and co-workers in two separate experiments. They found that the incidence of the disease was lower among those who had received subcutaneous vaccination than among the controls, and that those groups vaccinated a short time before the epidemic occurred showed a lower attack rate than did those groups vaccinated a longer time before the epidemic.

During the same period, Smith, Andrewes and Stuart-Harris, using a formaldehyde inactivated virus prepared from infected mouse lungs, obtained unfavorable results. They found that there was no essential difference between the attack rate among those vaccinated and not vaccinated, who developed influenza two weeks after vaccination. The value of these results in arriving at any conclusions as to the value of the vaccine is questionable as the strain of virus isolated in the epidemic was not antigenically identical with the virus in the vaccine. Taylor and Dreguss, using the same vaccine as did Smith above, found that during the 1937 epidemic of influenza in Hungary, the vaccine produced no immunity.

In the epidemic of 1937, this same type vaccine again failed to give protection either in England or in the United States. The period between vaccination and epidemic was three months.

From the above it can be seen that before 1940 the clinical trials in which either formalin-inactivated, active mouse lung virus or active tissue culture virus were employed, indicated that the incidence of clinical influenza was not significantly reduced by vaccination where the period between vaccination and epidemic was over three weeks.

It was shown by Hirst and co-workers that the greater the number of virus contained in the vaccine the higher would be the antibody titer rise and the rise would be of longer duration following vaccination. Therefore, an attempt was made to improve the concentration of the vaccine. Horsfall and associates found they could cultivate the virus in the growing chick embryo and the vaccine prepared from this chick embryo, which was ground up, contained a higher concentration of the virus than did those vaccines previously used.

This vaccine was tested clinically during the 1940-1941 epidemic of influenza A in this country. It contained the PR 8 strain and the swine influenza virus. The results reported were conflicting.

Only Martin and Eaton and Eaton and Brown reported experiments with this vaccine in which a significant reduction in attack rate followed vaccination. Martin and Eaton reported an attack rate reduction of 32 per cent and 52 per cent in two institutions. Brown and Eaton reported reductions of 50 to 60 per cent. In their experiments the period between vaccination and epidemic was only two weeks.

When the interval between vaccination and epidemic was from six to eight weeks, as was the case in the experiments of Dalldorf and in that of Siegel, it was found that this same vaccine produced no reduction in the attack rate.

The work of Horsfall who reported a much larger series with a reduction in the attack rate of 25 per cent cannot be used to draw conclusions from, as there was an enormous variation in the individual institutions which were beyond the sampling error.

Because there were no epidemics in the winters of 1941-1942 and 1942-1943, experiments were carried out by artificially infecting individuals who were vaccinated. The vaccines used during this period contained virus grown on the allantoic fluid of the growing chick embryo. The virus was inactivated and concentrated. Henle found that this vaccine produced an effective immunity for four months. Francis confirmed Henle's work that the vaccine induced an immunity but he disagreed with Henle in that he does not think it confers immunity for such a long period of time. He holds that Henle in his experiments had many subclinical cases which in the face of a more virulent organism would have been clinical cases.

In 1943 the Commission on Influenza carried out a controlled clinical trial to determine the prophylactic efficacy against epidemic influenza of a concentrated inactivated vaccine similar to the one used above by Henle and Francis. The vaccine had already been proved capable of furnishing protection against experimental induction of influenza A or B. The vaccine was given shortly before or during the epidemic. They found that the vaccine did produce immunity as was shown by the fact that 2.22 per cent of those vaccinated showed clinical evidence of influenza while 7.11 per cent of those not vaccinated came down with the disease. The vaccine was found to be most effective about one week after inoculation.

As this experiment gave no indication as to the duration of effectiveness of the vaccination, Hirst and co-workers carried out an experiment in which the duration between the vaccination and epidemic was from 11 to 14 months. They used a vaccine which was similar to the one used by the Commission. Serologic evidence of their subjects indicated that vaccinated individuals had on the order of three times as much circulating antibody at the time of the epidemc as they had before vaccination. They found that the attack rate among the vaccinated individuals was lower than among those not vaccinated. However, Hirst holds that the protection obtained after two months' lapse of time is insufficient for practical purposes.

The above experimental results indicate

that in the epidemics of 1940-1941 and 1943-1944 there was a reduction in attack rates when the formaldehyde inactivated vaccine was given shortly before or early in the beginning of the epidemic. There was no immunity four weeks after the inoculation of the preparation which was used in 1940. The concentrated vaccines used in 1943-1944 were more potent than those used in 1940. Maximum effectiveness was at two weeks at which time there was a sharp fall in effectiveness which however lasted at a low level for a year.

In view of the above facts, it can be seen that at the present time there is still no vaccine which will produce an immunity for a longer period than four weeks. Since it has been shown that immunity is produced within eight days following vaccination, it appears that from an economical view point and in view of the fact that it is impossible to predict the occurrence of an epidemic, it seems that at present the wisest thing to do would be to give the vaccination after the epidemic has begun and the causative virus determined.

As shown by Salk and co-workers, and Mawson and Swan, vaccination against influenza virus Type B either by the intranasal or by the subcutaneous method will produce effective immunity for a period of four months. It may be said that the problem at present concerns the production of immunity to influenza Type A virus.

CONCLUSIONS

The following conclusions have been drawn from the experiments and data described in this paper:

1. The greater the number of virus contained in the vaccine the more potent will be the preparation.

2. There is no significant difference in the antibody response of human beings to active or inactivated virus vaccines.

3. There is a positive correlation between the level of antibody in the serum and the susceptibility of the individual to the disease. The correlation is not absolute as there are other factors which play a part in the immunity to influenza but the level of the circulating antibodies is probably the most significant single factor determining whether infection does or does not occur.

4. There is specificity of antibody response in human beings to the different strains of the influenza virus and therefore if the vaccine is to protect against any certain strain of influenza virus then the vaccine must contain that particular virus strain.

5. Conclusions as to the efficacy of the intranasal method of vaccination cannot be drawn until the method has been tested in the face of an epidemic. It does have the advantage of being easily and quickly prepared.

6. The use of the concentrated vaccine subcutaneously will produce definite immunity for a period of four weeks. It is most effective two weeks after vaccination. Immunity can be expected eight days following vaccination.

7. From an economical point of view it would be best to give the vaccine after the outbreak of the epidemic. This is best because it is hard to predict the appearance of an epidemic and because immunity can be expected within eight days.

8. Immunity to influenza Type B can be established by vaccination for a period of four months, following vaccination with a concentrated vaccine containing influenza. The main object now is to find a vaccine which will give immunity to influenza Type A for a longer period than four weeks.

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CLINICO-PATHOLOGIC CONFERENCE

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CASE SUMMARY

The following clinico-pathologic conference was presented before a meeting of the Orleans Parish Medical Society.

E. W., a colored female, 14 years, was admitted on April 21, 1943 and expired on May 11, 1943.

C. C. Fever.

P. I. The patient became ill on March 8, 1943, with crying spells and irritability. Two or three days later her feet, legs and arms began to swell. Several days later she broke out in a rash over the entire body, including the face and extremities. The lesions first appeared as blisters the size of a dime. The swelling lasted some two weeks before gradually disappearing. The skin lesions persisted, though were improving. Since the beginning of her illness the patient had fever. She had spells of nervousness, extreme irritability and voluble talking spells. On April 19 the patient began vomiting and the mother noticed streaks of blood in the vomitus. The patient believed she lost considerable weight since the onset of the present illness.

P. H. The patient has always been in good health. She had had the usual childhood diseases.

Physical Examination: The patient was a well developed and well nourished colored girl who appeared older than her stated age of 14. She appeared acutely ill, talking irrationally at times. The head revealed no abnormality. The pupils were equal and regular and reacted to light and accommodation. A scaly eczematous lesion was noted on the lobe of the left ear. The lips were parched. Many mucous patches were present on the palate. The pharynx was clear. The neck was pliable with no masses. The skin was dry and hot. There were numerous healed and partly healed lesions over the entire body, particularly the chest and lower extremities. There were several scaly lesions on the upper extremities. These were covered with crusts. The lymph nodes were not enlarged. The lungs were clear to auscultation and percussion. The heart did not appear enlarged and the heart tones were of good intensity. The rhythm was regular; the rate rapid. No murmurs were heard. The abdomen was not distended and there was no tenderness or rigidity. No organs or masses were felt. Genitalia showed a slight amount of whitish purulent discharge. On pelvic examination there was tenderness and a mass felt on the left side. The cervix was small and not easily moved. The extremities showed no deformities or paralyses. Reflexes were physiological.

Laboratory Findings: Blood count on April 22, 1943, showed hemoglobin 11 grams, red blood cells 3,860,000, white blood cells 12,800, 64 per cent polymorphonuclear leukocytes and 36 per cent lymphocytes. On May 5, 1943, hemoglobin was 8.5 grams, red blood cells 2,500,000, white blood cells 4,700, with 65 per cent polymorphonuclear leukocytes, 4 per cent monocytes and 33 per cent lymphocytes. Urine on April 23, 1943, showed a specific gravity of 1.020, no albumin or sugar; microscopic, loaded with white blood cells. On April 5, 1943, specific gravity was 1.020, albumin +, sugar 0; microscopic examination revealed many red blood cells and occasional pus cells. Sulfathiazole crystals were present. The blood Kline and Kolmer were negative on three occasions. Blood cultures on March 29, 1943, and May 6, 1943 were reported negative. Blood agglutinations for E. typhi, paratyphi A and B, Brucella mellitensis and abortus and Pasturella tularensis were negative. Cerebrospinal fluid on May 6, 1943, showed a pressure of 65 mm.; grossly it was reddish and cloudy and contained many red blood cells and lymphocytes. Pandy test was negative, glucose was 57 mg. per cent and chlorides were 673 mg. per cent. Electrocardiogram on May 7, 1943, showed rapid sinus tachycardia. Chest plate on May 3, 1943, showed enlargement of the cardiac shadow with generalized enlargement of all the chambers. Slight passive congestion of the lungs was also present.

Clinical Course: The patient ran an irregular temperature curve with daily elevations to above 104° F. which on some days remitted to normal or nearly normal levels. Pulse rate was markedly elevated reaching 168 terminally. The patient was put on sulfathiazole after admission but this was discontinued on April 25, 1943. On April 3, 1943, the right eardrum showed obliteration of the markings. The heart appeared large on this day and there was gallop rhythm with a split first sound. There was dullness of the left base of the lung posteriorly with absent breath sounds over this area. The liver was palpated two fingers below the costal margin. On May 6, 1943, the blood showed no sickling. On May 8, 1943, she was given 500 c.c. of whole blood and her condition appeared very poor. On May 8, 1943, the patient was dyspneic and the pulse rate was 180. There were moist, bubbling rales throughout the chest. She was given ouabain 1/128 grain intravenously. Oxygen therapy was administered. On May 9, 1943, the blood pressure was 100/82. She appeared profoundly toxic and stuporous. The heart rate was very rapid. The breath sounds were almost entirely absent in the left base. On May 10, 1943, her condition was very poor, pulse weak and heart rate was 170. She died on May 11, 1943.

Clinical Diagnosis: Septicemia.

Dr. Edgar Hull: It has been my experience that whenever we fail to make a correct clinical diagnosis we fail for one of three reasons. First, we may not have sufficient information; second, the information which we have may not be accurate; and third, which is perhaps the most common reason for missing the diagnosis, we do not know enough. In order to minimize the role of insufficient information I would like to ask Dr. Bennett a few questions so as to clear up certain points in the clinical history.

Was the swelling slight or marked? The reason I ask this is because the swelling is pretty hard to fit in with other findings.

Dr. Granville Bennett: It was apparently quite marked. It was one of the first things the patient complained of.

Dr. Hull: Did the patient vomit incessantly or only once or twice?

Dr. Bennett: From the history I would say that the patient vomited only a few times.

Dr. Hull: That question is pertinent because of the suspicion of central nervous disease symptoms in this patient. I wonder if Dr. Bennett can say what is meant by the mucous patches?

Dr. Bennett: The lesion was not fully described in the record.

Dr. Hull: In that case we may be justified in assuming the lesions were similar to the bullous lesions present on the skin

Dr. Bennett: I believe that is correct.

Dr. Hull: Another point I am interested in is the source of the vaginal discharge Was it cervical or vaginal merely? I ask that question because it is recorded tha the cervix moved with difficulty and tha there was a mass in the left side of th pelvis.

Dr. Bennett: That question can not b very well answered from the case record It is stated that the vaginal examination revealed a reddened cervix but the source o the exudate is not given.

Dr. Hull: Were bacterial studies done of the vaginal discharge, or urine or spinal fluid?

Dr. Bennett: I am sorry that I can not answer that question. It is my understanding that all the bacteriologic studies that were made were negative.

Dr. Hull: The patient's blood pressure is recorded a couple of days before she died. What was it on admission?

Dr. Bennett: The blood pressure is not recorded in the report of the orginal physical examination.

Dr. Hull: Another question I consider important relates to the cerebrospinal fluid pressure. It is reported as 65 mm. Was the pressure expressed as mercury or water?

Dr. Bennett: Water.

Dr. Hull: Was the fluid centrifuged, and if so, was the supernatant fluid clear?

Dr. Bennett: It was clear after centrifugation.

Dr. Hull: The blood in the fluid was then probably due to trauma of tap. Was a cell count done to determine the number of lymphocytes?

Dr. Bennett: It is listed as 6,000 cells.

Dr. Hull: Was there any history of this patient's having taken drugs prior to the appearance of the rash?

Dr. Bennett: There is no mention of that in the history.

Dr. Hull: After these preliminary questions we will review the symtoms which the patient had on admission. She was ill six weeks. Her illness began with crying, irritability and nervous manifestations. Shortly thereafter her feet and face and arms began to swell. This swelling subsided after two weeks. A few days before admission she developed skin lesions and later began to vomit. During this time she had fever.

Upon admission the following signs were present: She was acutely ill; she was irrational and had high fever. Scaly skin lesions and eczematous lesions on the left ear were noted and there were lesions of the mucous membranes of the mouth. There was vaginal discharge, the cervix uteri was not easily movable and there was a mass in the pelvis. Objectively the lungs and heart and central nervous system were negative at the time of admission. There was slight anemia, moderate leukocytosis and pyuria.

She later developed marked tachycardia, cardiac enlargement, gallop rhythm and other signs of congestive heart failure, and signs which might be attributed to left pleural effusion. Anemia became more severe and there was slight leukopenia. It is noted that markings of the left ear drum were obliterated.

Spinal fluid was found to be bloody with lymphocytes but normal chemistry.

The early pyuria was replaced with hematuria. Finally, it is noted, death occurred after an illness of two months.

In this case as in any other case in a conference of this kind, I think we should attempt to establish three points about the diagnosis: first, etiology and pathogenesis; second, site and nature of the lesions; and third, the functional disturbances and a prediction as to the cause of death.

The following are the thoughts we might have regarding the data available on admission of this patient as regards the etiology. I think most of us will agree that the etiology here seems to be infectious and the nature of the lesions inflammatory. Also there are no specific infectious diseases particularly suggested by the history; by this I mean specific infectious diseases characterized by skin lesions as well as systemic manifestations such as syphilis or disseminated lupus. Since from those data available on admission none of these seem to be suggested, it would seem therefore that the patient was suffering with sepsis from one of the pyogenic organisms, possibly a coccus.

In regard to the pathogenesis of the lesion: If this patient had pyogenic sepsis there had to be some site of entry. The possible sites of entry suggested are first, the skin. The skin lesions, however, are definitely stated to have appeared after the onset of the fever and the nervous manifestations, so if this patient had pyogenic sepsis it is more likely that the skin lesions were metastatic rather than the site of entry. Another possible site is the eczematous lesion of the left ear. The third possible site is the pelvic organs, which seem more likely since the cervix was reddened and there was discharge; the cervix was fixed and there seemed to be a pelvic mass. It is in the realm of possibility that this patient could have had a septic abortion which was concealed from friends, relatives, and even from the doctor. Another possible site of entry is the kidneys. In view of the pyuria with absence of other symptoms referable to the kidneys, I would believe that the pyuria was a manifestation rather than the source of the sepsis.

The sites of involvement definitely indicated by the data on admission are few. There was definite evidence of involvement of the skin. If the pus in the urine came from the kidneys and not from the vaginal discharge we could say there was evidence of kidney involvement. There was no definite involvement of the brain or heart, lungs or other viscera from the data.

Later developments, however, might give us additional reflections as follows:

Continuing on the supposition of pyogenic sepsis, there develops another possible site of entry, the ear, since it is recorded that the markings of the ear drum were obliterated.

We have evidence of further sites of involvement, for example, the kidneys; this time albuminuria and hematuria replacing pyuria. If the patient had sepsis this hematuria indicates acute nephritis or bleeding pyemic abscess in the kidney. It is recorded on the urinalysis report that sulfathiazole crystals were present in the urine; these could have caused hematuria.

Now, the heart: The heart in the later course of illness became markedly enlarged. If this is a case of pyogenic sepsis the cardiac enlargement and cardiac failure might be attributed to interstitial myocarditis and small abscess of the myocardium or perhaps a degenerative type of myocardial lesion.

Central nervous system: Apparently there were no objective signs of central nervous system disease except stupor and lethargy and irrationality which could be due to toxemia. The spinal fluid pressure was normal. The chances are that the blood was due to trauma of the tap. If this patient did have cerebral lesions on the basis of pyogenic sepsis there is the possibility that there could have been a cerebral abscess in a silent area, as for example the temporal lobe.

There was also evidence of involvement of the respiratory system; signs which could be due to pleural effusion were present. If there was respiratory involvement in pyogenic sepsis it is possible to have small or medium size abscesses with effusion or empyema.

The liver which previously was not palpable became enlarged; this can be attributed to passive congestion resulting from cardiac failure.

It seems quite obvious that the actual cause of this patient's death was heart failure and toxemia. In view of the later developments in the case, after admission, it might be in order to make a few further reflections on the etiology and pathogenesis although I believe that the patient's story fits in pretty well with pyogenic sepsis with unknown organisms.

We should consider one disease in which there occurs skin involvement together with visceral lesions—disseminated lupus erythematosus. The clinical picture in this case is not typical for disseminated lupus but I think it can be pointed out that it is not at all incompatible. In this disease the lesions are usually not bullous but may be. This patient's lesions were bullous. High fever is quite characteristic. This patient had high fever. Pleural effusion is common; this patient may have had pleural effusion. Leukopenia is characteristic; this patient had leukopenia on one of the two blood counts recorded. If this patient actually bled into the subarachnoid space, which seems unlikely, it should be noted that in disseminated lupus there may occur spontaneous bleeding due to thrombocytopenia. Moderate anemia, which this patient developed, is the rule in disseminated lupus. Death within two months of onset is extremely uncommon, however; there are usually erythematous lesions. Heart failure is not characteristic, though cardiac enlargement is common. Pericarditis develops frequently. Endocarditis is quite frequent in disseminated lupus, described by Libman and Sachs. In this case there is no evidence of pericardial or endocardial lesions, though the latter may occur without murmurs. Arthritic manifestations which occur frequently in disseminated lupus were not present in this patient. There were no joint pains that I know of.

Therefore, I would say that the weight of the evidence indicates that this patient probably did not have disseminated lupus erythematosis.

I therefore am inclined to believe that the best bet, from the information available, is a diagnosis of sepsis from some pyogenic organism, entrance site unknown; perhaps the pelvis and possibly the middle ear, the organism from this unknown site entering into the blood stream causing metastatic lesions of the skin, of the kidneys, of the heart, possibly of the lung and pleura and possibly also of the brain, although we have no definite evidence of involvement of the brain. In the kidneys, if this diagnosis is correct, we would expect to find one or several abscesses, perhaps also diffuse nephritis; in the heart, interstitial myocarditis, perhaps with small abscesses. If lung involvement we might find abscesses with empyema in the left side. If brain involvement, perhaps abscess might be present in some relatively silent region.

Dr. Bennett: I would like to ask Dr. Hull why he dismisses the reported negative culture studies in arriving at his diagnosis?

Dr. Hull: I do not dismiss them but I certainly think that we can have septicemia and particularly pyemia, with repeatedly negative blood cultures. We often have difficulty in getting positive blood cultures even in cases of bacterial endocarditis. The blood culture is of more positive than negative value.

Dr. Bennett: This patient presented, at postmortem, findings that cause the pathologist to lean upon the clinician for support in submitting his interpretation. For that reason I think this is a particularly good case for a clinico-pathologic conference. It demonstrates clearly that the pathologist does not always have the last word.

I would like to state briefly the postmortem findings and then present, with the aid of lantern slides, our microscopic observations and discuss the disease process which we believe to be represented by this case.

The body of this patient was fairly well developed but undernourished. I think the undernourishment was compatible with the duration of the illness. She had a skin eruption that was represented at the time of postmortem by a dry scaly rash. The rash was more pronounced over the upper extremities and thorax, particularly on the anterior surface of the body. This rash (which was not fully or clearly described in the clinical record) was a rather dry silvery scaly type of lesion. There were no inflamed margins around any of the lesions.

On opening the body cavity, there was a pleural effusion on the left side measuring approximately 200 c.c. This consisted of a clear straw colored liquid. In some places a scant amount of fibrin was deposited upon the pleural surfaces. The pericardial cavity contained 25 c.c. of clear amber fluid. The pericardium was roughened, rather acutely congested and presented a dry granular surface interpreted as an early stage of inflammatory exudation. The lungs were both heavier than normal, weighing 380 grams each. The entire lower lobe of the left lung was consolidated. The findings were interpreted as indicating a confluent bronchial pneumonia. Other portions of the left lung and the right lung showed patches of consolidation and acute pulmonary edema.

The liver was slightly enlarged, appearing a short distance below the costal margin. The spleen was not remarkable on gross examination. The combined weight of the kidneys was greater than normal. The left kidney weighed 140 grams. The kidneys were soft and pale and when sectioned the parenchyma bulged over the capsule.

There was no inflammatory mass in the pelvic cavity. We were unable to demonstrate any lesions that would explain the clinical findings described in the record. Other findings of importance were limited to the heart.

The heart was slightly enlarged, moderately dilated, and a little softened. When opened the most conspicuous lesion was found on the mitral valve. I think you can perhaps make out in this gross photograph the row of small vegetations just along the line of contact closure. At the time of postmortem the question was asked whether these were rheumatic vegetations. One must admit that they are consistent with the endocardial lesions of rheumatic fever. However, there was no suggestion of any involvement of the posterior wall of the left auricle such as is usually seen in rheumatic endocarditis with valve involvement of this degree.

This photograph will orient us with regard to the gross pathology in the lungs and kidneys. This is the left lung showing diffuse consolidation. The kidney shows a somewhat widened and thickened cortex with greater striation than one normally sees.

How were these gross autopsy findings to be interpreted? It seemed that the most important and significant lesion from a diagnostic point of view were the changes in the heart. We therefore delayed our summarization of the case in the hope that the microscopic sections might help us. I would like, at this time, to show the microscopic changes. We believe that these lesions are compatible with the disease process which Dr. Hull suggested as his second choice; namely, disseminated lupus erythematosis. This is a photograph of a section taken from the left lung. The section shows bronchopneumonia. In this region there is some interstitial infiltration. In the remainder of the lung there was a much greater amount of acute edematous exudation than is to be seen in this reproduction. This is one of the lesions that were seen on the mitral valve. This is the valve stroma on this side. Unfortunately it does not show very well on the screen but you can see that there is separation of the connective tissue stroma; a change that is referred to as "fibrinoid degeneration." This change is seen in disseminated lupus throughout the connective tissues of the body. Superimposed upon this "fibrinoid" lesion is a large thrombotic mass. Such vegetations contained no visible bacteria in specially prepared sections. Here at the base of the mass are numerous fibroblasts showing that the lesions are beginning to organize.

This photograph shows a similar vegetative lesion on the tricuspid valve.

I thought it might be of some interest to this group to present, in contrast to these vegetations, some photographs of the highly characteristic rheumatic fever lesions. This is small vegetation on valve of a heart affected by rheumatic fever. In lupus one sees "fibroid" degeneration. However, one does not see cellular responses of this type. This lesion is highly characteristic of active rheumatic fever.

Here is another rheumatic fever lesion; in this instance there is infiltration and vascularization of the valve. Here is an endocardial lesion. None of these lesions were found in the case discussed. The maximal cardiac change in the case presented tonight was fibroid degeneration in connective tissues.

One of the manifestations of lupus that is often regarded as being characteristic is the kidney lesions. These kidneys show rather less than we would have expected from the gross examination. There is swelling of tubules, and some vacuolization of the tubular cells. There are no hyaline or granular casts. Scattered throughout the kidneys were glomerular lesions of this sort. There is hyalinization of the capillary tufts and some adherence of the capillaries to the capsule. These lesions while not pathognomonic of this syndrome of disseminated lupus, are consistent with it. The short duration of the disease process, in the present case, may have been a factor of importance in determining the extent of the renal changes.

In the spleen there were occasional vessels showing changes of this sort in the arterial walls accompanied by thrombosis and associated with necrotic foci. There were also larger vessels showing increased connective tissue in the adventitia. These changes have been described as typical of lupus or frequently associated with it.

Dr. Hull was impressed with the fact that there was no arthritis. It is perfectly true, according to the case record, that the patient did not complain of joint symptoms. We have observed in numerous cases that joint symptoms may be overlooked in seriously ill and bedridden patients. It is not uncommon upon routine examination of the joints to find foci of metastatic infection in the synovia in patients dead of pneumonia or other infectious diseases. In this patient the knee joint contained an excess quantity of synovial fluid. On the synovial surface there is fibrinoid material. The synovial villi are hypertrophied. There is also a moderate degree of cellular infiltration. I am sure that the fluid from this joint would have shown a marked increase in the number of cells.

The lesions of the skin, as shown in this photograph, are entirely consistent with those of disseminated lupus. The skin is much more corrugated than normal. The ducts are plugged with large scaly crusts of keratinized epithelium and this is a mild inflammatory reaction.

These are the anatomic findings in this case. I believe that from the morphology this case fits best with the syndrome that is referred to as acute disseminated lupus erythematosis. To a pathologist this diagnosis is an unsatisfactory one because the observed lesions exhibit extreme variation in severity and distribution. For instance some reports show that the kidneys are affected in 75 or 80 per cent of cases whereas, in other groups, kidney changes have been found in less than 50 per cent of the patients.

In the patient presented tonight there are lesions in the skin, kidney, heart, serous surfaces and vascular structures throughout the body which I believe can be interpreted as those of acute disseminated lupus erythematosis.

Dr. W. H. Harris: I did not expect that the president would call first upon pathologists for remarks concerning this interesting conference. I really feel that the clinicians should first present their comments in connection with the case that Drs. Hull and Bennett have discussed. However, after viewing the lantern slides of Dr. Bennett, I certainly concur in his pathologic interpretation. It does occur to me that more extensive and indicative lesions were curtailed by the comparative brevity of the primary illness. This latter was due to the superimposed acute pneumonic process which occasioned the patient's death. In looking at the pictures of the lung, while evidence of passive congestion is noted, there also occurred an acute exudative pneumonitis as evidenced in both the alveoli and the bronchial tubes.

It occurs to me that the clinical investigation of the case was somewhat inadequate. Dr. Hull had to ask many questions which should have been more specifically and clearly represented in the case history. Many such questions could not be answered as the information was not available. I was particularly impressed by the lack of replete gynecologic presentation. There was a definite abnormality reported for the vaginal examination. No progress report of the tumor mass and partial fixation of cervix was described. Likewise there was an apparent absence of bacteriologic investigation.

I believe this innovation into our Parish Society is a splendid one and I think that the audience as a whole should not hesitate to express their opinions and to ask questions which will enliven the interest and yield additional information. From this latter standpoint, I would like to ask Dr. Menville's opinion of the x-ray of the chest relative to lung and heart lesions.

Dr. Leon J. Menville: I do not recall

seeing this roentgenogram before. However, one should be very cautious in making an interpretation of pericarditis with effusion with what is seen on a flat film. The patient should be fluoroscoped for consideration of absence or diminshed pulsations, before one considers making a probable diagnosis of pericarditis with effusion. I believe, from that film alone, that you were dealing with a large heart.

Dr. Bennett: The heart weighed 250 grams. It was dilated and somewhat soft.

Dr. Randolph Lyons: I do not think it is fair for clinicians to get up with clinical and pathologic information and criticize Dr. Hull's discussion. He gave all of the symptoms of lupus which fit in perfectly and I do not see why he did not put this diagnosis first.

Dr. Edwin H. Lawson: Since this case has been so thoroughly presented by both Dr. Hull and Dr. Bennett and as I have never personally seen a case of this type, it would be facetious for me to attempt a discussion. I would like to ask Dr. Bennett for an explanation of the pelvic symptoms and what, if any, were the changes in the liver.

Dr. C. J. Tripoli: It was really a treat to listen to the speakers giving their most interesting discussion of this case.

There are only two questions in my mind: What, if any, cultures were made of the heart blood at autopsy? What, if any, arterial changes were found in the pulmonary circulation?

Dr. George Hauser: I would like to ask what the examination of the nervous system disclosed?

Dr. W. A. Wagner: I would like to know why, in view of the fact that the clinical history signified trouble with the ear, was it not autopsied and in view of the bacteriologic phase of the case, anaerobic cultures were not made. Infection may have been in the lateral sinus or ear and since the etiology of this case is not known such a study might have disclosed an etiologic factor.

Dr. Bennett: In answer to the questions asked by Dr. Lawson: There were no specific changes in the liver; only slight to moderate congestion. There were no lesions in the pelvis to explain the physical findings or the symptomatology suggesting an inflammatory disease. The peritoneum was smooth and uninvolved, although in lupus it is not uncommon to find serious surface changes affecting pelvic organs.

Someone inquired about cultures of the heart blood. Cultures taken at the time of postmortem were negative.

There were no specific changes observed in the pulmonary arteries which could be considered specific in any way.

The central nervous system was not examined because permission for such examination was not granted. Since this case showed some of the signs of central nervous system involvement that are not infrequently noted in lupus, it is unfortunate that the brain was not studied. While the pathologic changes associated with central nervous system involvement have not been completely worked out, it is probable that vascular lesions such as those found in other parts of the body, are responsible for the central nervous system symptoms.

NEW ORLEANS

Medical and Surgical Journal

Established 1844

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THE JOURNAL *does not hold itself responsible for statements made by any contributor.*

THE LOUISIANA STATE UNIVERSITY MEDICAL SCHOOL

It is with very real dismay that we have been reading in the pages of the local New Orleans papers of the difficulties at the Louisiana State University Medical School. These troubles seem as if they have been magnified considerably by the papers and what might at the onset have been handled quietly and tactfully, has finally stirred up a great deal of really unnecessary feeling. Certainly at the start of the controversy a tactful attitude by those concerned might have alleviated the disagreeable conditions that have now arisen.

A situation such as this is tragic. It is impossible for the average teacher of medicine who is on a full time basis to get up and go to another medical school when and if he so feels like it. It is very difficult for a full time man to teach in an atmosphere which is not conducive to an academic spirit, and to carry on research and investigative problems when there is a feeling of uncertainty and unrest. The undergraduate students are to be commiserated with because there is no doubt but that their medical education will be in a sense injured or hurt by the feeling of unhappiness that now exists among these boys as well as among their teachers.

It is earnestly hoped that by the time this editorial is published that the difficulties that the school is now having will have become dissipated and will be gone. The Louisiana State University Medical School, started under difficulties, has become one of the outstanding medical schools of the South. It is our sincere wish that it will maintain the high standards that it has upheld in the past few years.

DR. FRANCIS FENWICK YOUNG

It was with sincere regret and the sense of a great loss that the medical profession, especially the organized medical profession of the State of Louisiana, learned of the death of Dr. Francis Fenwick Young of Covington, La., September 26, 1945. A brief biographic sketch of this pioneer psychiatrist will demonstrate the unusual abilities and qualifications of this accomplished physician.

Dr. Young was born in Abbeville, La., on July 30, 1863, the son of a physician, Dr. Francis Devillier Young and Marie Mathilde Guegnon. He was graduated from St. Charles College, Grand Coteau, La. on July 25, 1881, with a B. S. degree, and received his M. D. degree from the University of Louisiana (now Tulane) in 1884. For one year he interned at the Charity Hospital, New Orleans. In 1892 he founded the Fenwick Sanitarium at Abbeville, La., and remained the Director and Psychiatrist-in-Chief of this institution bearing his middle name until his death. He moved to Covington, La. in 1912 and continued his sanitarium in this new location, feeling that the climate and location were better suited. He held diplomas for post-graduate work at Columbia University, New York Post-Graduate School, New York Polyclinic and other Eastern schools. A member of organized medicine and many medical societies, he was always active in such work. He was an honorary member of Alpha Kappa Kappa Fraternity from the chapter at the University of Texas.

A pioneer in his field, he was the first physician to report cases of beriberi in Louisiana, in 1903. This article was published in the Journal of the American Medical Association in January of that year. His opinions concerning the problems of the alcoholic and drug patient, new in concept at that time, proved to be correct and became commonly accepted. He published many other valuable articles.

Dr. Young's was a family of physicians. In addition to his father he had five brothers and four sons who practiced medicine, two of them surviving to carry on the valuable work of the Fenwick Sanitarium he established.

The family of Dr. Young have a valuable heritage and the surviving four sons a reputation to maintain.

PREOPERATIVE USE OF THIOURACIL IN HYPERTHYROIDISM

Since its introduction into modern therapeutics, much has been written concerning the drug thiouracil. The evaluation of its usefulness in the preoperative treatment of severe hyperthyroidism by Lahey, Bartels, Warren, and Meissner* is timely and interesting.

The clinical observations upon which this report is based cover a period since May 1943. It was felt that the drug had been proved to be capable of reducing an elevated basal metabolic rate of hyperthyroidism to normal if administered over a long enough period of time and that there was a gradual disappearance of symptoms except the eye symptoms if these were pronounced. It was not felt that there was any proof that permanent remissions in hyperthyroidism could be secured by administration and then withdrawal. That it was valuable in the preoperative management of hyperthyroidism seemed conclusive.

The authors' experience covers 190 patients with severe hyperthyroidism treated preoperatively with thiouracil, followed by thyroidectomy. Both Graves' disease and toxic adenomatous goiter were included. No case failed to respond to the drug. Early in their experience they found that with the use of the drug two-stage thyroidectomies could be eliminated and so-called thyroid storms postoperatively avoided entirely. However, in mild hyperthyroidism preparation with iodine was still recommended since sufficient remission could be secured preoperatively without the risks involved in the use of thiouracil.

In most cases, surprisingly enough, the treatment was ambulatory. They were seen at regular intervals for examination and white and differential blood counts were made, usually every 10 to 14 days. The dosage was a total of 0.6 gram daily, 0.2 gram at 7 a. m., 2 p. m., and 9 p. m. until the desired result was obtained.

An interesting observation was the increased friability of the gland at operation with extensive bleeding of the entire operative site. It was then found that when Lugol's solution was administered during the three weeks' period before operation the friability of the gland was overcome. Iodine and thiouracil were given simultaneously for two weeks and then for one week preoperatively only iodine was given. It was believed that involution of the gland is furthered when thiouracil is not being administered. Those patients who received Lugol's solution before thiouracil was begun responded less quickly and usually required a longer period of treatment. Of the 190 cases there were no postoperative deaths.

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*Lahey, Frank H., Bartels, Elmer C., Warren, Shields, and Meissner, William A.: Surg., Gyn., and Obstet., 81:425-439, 1945.

Toxic manifestations occurred in 23 of the 196 patients given thiouracil. Leukopenia and granulocytopenia were the most frequent and most alarming reactions, including fever, skin eruption, scleredema, and swelling of the salivary glands.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

CONFERENCE ON MEDICAL SERVICE AND PUBLIC RELATIONS

There was held in Chicago on October 19 and 20 a conference of the Council on Medical Service and Public Relations of the American Medical Association. Two representatives from every State Medical Society were invited to attend this conference. There was representation from the Louisiana State Medical Society and a review of the transactions and some of the highlights of the important subjects discussed should prove of interest.

It was brought out that the Wagner-Murray-Dingell Bills (S. 1050 and H. R. 3293) are still in committee and there appears to be at present very little activity among the congressmen in regard to having this important measure given a hearing before the committee. However, it was very evident that much attention was being given to other bills, such as the Hill-Burton Bill (S. 191) and the EMIC Bill (S. 1318). These measures appear to be, from reliable information, substitute measures, similar provisions of which occur in the master bill S. 1050. Hearings have recently been conducted on S. 191 which provides for a survey of hospitals and expansion of hospital facilities in the United States on a state level. There has been a widespread support of this measure by medical and hospital groups; however, there has not yet been any report given out from the committee. The present status of the EMIC Bill is stationary. There has been no hearing due to the fact that Senator Pepper is out of this country making some observations in Europe. On the whole, the outlook for any decision on these vital measures in the near future is rather remote. Obviously it is imperative that each and every physician of this state continue to use whatever pressure and influence he can on his congressmen to oppose such legislation.

The tendency of the congressmen seems to be away from any new bills creating additional taxes as the feeling now is obviously to reduce taxes.

There is a great deal of interest manifested in several bills looking toward the creation of a Scientific Research Bureau under control and supervision of the federal government. We should all remember and should call attention to the fact when talking to our congressmen, that there should be a distinction made between the results of scientific research and their application for the good of the people. This application should not be left to federal control but should be given out to the various groups and agencies for proper dissemination and use for the citizens of this country.

There was considerable discussion at the conference in reference to voluntary prepayment medical insurance plans. In regard to the various plans—their failures and successes—there were no particular new thoughts brought out. However, in the discussion it was demonstrated that a great many of these insurance projects had failed due to lack of uniformity over the whole country. There were very strong arguments brought forward that this form of medical insurance should be of a national scope, having a uniform policy. This then could be altered or changed as the insurance laws of the respective states demanded. Obviously this is intended to meet the growing demand on the part of the industrial businesses of the country to have a coverage for all of their employees in all states in which they are employed. For example, the American Telephone and Telegraph Company, Western Union, various automobile industries, packing houses and other big corporations that prefer such a plan for their employees. This would prevent the necessity of carrying a different policy in every state where the industry may have branches. Many of these companies are postponing adopting this form of insurance for this reason and it has been recommended to the Board of Trustees of the A. M. A. that some form of a national health agency for prepayment medical insurance be sponsored by the A. M. A.

The lack of uniformity exists also in the Blue Cross insurance where a plan for the entire country is now being discussed. It seemed that there was considerable approval of this plan by the representatives present at the conference with the hope that the past jealousy between the Blue Cross plan and medical service plans would be abrogated. The feeling also existed that our medical organizations have been more or less on the defensive side in regard to furnishing adequate medical care to needed areas and have not offered a constructive plan in this regard. This question approached such an issue that there appeared on the program a gentleman representing an insurance company, offering to sell same to the A. M. A. if this is desired.

There is an organization already formed, known as the American Medical Insurance Company, in New York, which is preparing to write a policy for a national program of medical service. This may be a solution to the problem. It is interesting to know that the American Association of Industrial Physicians and Surgeons is behind the program.

It was reported from Brooklyn that a group of physicians there is fostering a national plan for medical service. Also the Medical Society of New York recently, through their House of Delegates, relegated to the Council the right to go ahead with a program, the details to be worked out later. This is to be a casualty company, nonprofit, chartered under the laws of New York.

The various state societies have been asked to support a national plan. What may come from these constructive suggestions is of course doubtful; however, it is thought that these facts would prove of interest to our members.

TERMINATION OF HEALTH PROJECTS UNDERTAKEN AS WAR MEASURES

At the invitation of the Director of the State Board of Health a special committee, from the Executive Committee, met with the Board on October 11. The subject matter discussed was the position of the Executive Committee of the State Society in regard to continuation of the venereal disease clinic at Delgado Memorial. The meeting was opened by explanatory remarks by the President of the Board of Health after which the members of the special committee presented the attitude of the Executive Committee in desiring that the clinic be discontinued. The committee also answered questions from various members of the Board as to the ability of the medical profession to take over this work after it is discontinued by the Board of Health.

While not on the agenda for discussion, the question of extending the EMIC program was also discussed and the members of the group presented to the Board the reasons for the medical profession's desire to discontinue this service in accordance with agreement in 1943.

The committee was received very cordially and hospitably and Dr. Brown, for the Board, expressed thanks for such cooperation on behalf of the Executive Committee of the State Society. He stated he wished to assure the State Society that the Board is most desirous of cooperating and accepting the wishes of the medical profession in these vital matters.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of very month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

CORRESPONDENCE

Below is copy of letter received by the Secretary-Treasurer from Commander Shirley C. Lyons.

Samar, Philippines,

August 30, 1945.

Dear Paul:

From time to time I receive short notices from the State Medical Society bearing your signature. I want to assure you that any news from home concerning medical society activities is always most welcome. The most recent news with your name was a reprint from the New Orleans Medical and Surgical Journal "Postwar Medical Planning". I answered a questionnaire from that committee some time ago. I do not have a copy of the answer and am wondering if my views have changed. The younger men all seem to be interested in further training and wish a residency in some special work. A fair number will need ordinary internships. The older group, as yours truly, will want about three months to do as we please and will probably spend part of the time attending clinics. (At least that will be a good excuse). No matter how we spend the time it will require about three months for a period of readjustment after we have been discharged from the service. We have worked hard (at least most of us have) contrary to the general idea that most of the folks back home seem to have developed regarding medical men in the service. We are all proud of the fact that we had an opportunity to serve the armed forces. We all realize that each of you at home did just as much and made just as many sacrifices. We are all tired of the military life and anxious to get home. This of course, is especially evident now since the fighting is over. In this particular area it looks as if we will be needed for a period of at least three more months, possibly longer. I am perfectly willing to remain here until our job is completed and then return to the States for complete separation from the service.

We have a 3500 bed hospital with all facilities right in the middle of the jungle. The duty is only semi-rugged. Up until peace was declared we were very busy and at the rate we were receiving patients we were already looking for more beds. We certainly had no idea the war was coming to such a rapid close. We had the survivors from the Indianapolis here and of course we were all terribly upset over that tragedy. I have seen enough injured men to last me the rest of my life.

We had a staff of 70 plus doctors (already losing them since peace). I enjoyed the title of Chief of Surgery. Our hospital census is around 1800 now and unless something unforeseen develops it should show a gradual decline. They have sufficient dispensaries out here to handle the routine work.

So far as I can judge at present I should be back with you by the next meeting of the State Society at least. I hope this finds all well with you. With very good wish.

Sincerely,
Shirley.

LAFOURCHE VALLEY MEDICAL SOCIETY

A reorganization meeting of the Lafourche Valley Medical Society was held in Thibodaux on Wednesday, October 3, 1945, at which time the following officers were elected: Dr. Guy R. Jones, President, Dr. H. L. Haydel, Vice-President, Dr. Philip Robichaux, Secretary-Treasurer.

BI-PARISH MEDICAL SOCIETY

The Bi-Parish Medical Society met at the East Louisiana State Hospital on October 3. After an excellent dinner, prepared by the institution, the society convened in the staff room for a scientific program.

Mr. M. A. Taff of the Vital Statistics Department of the State Board of Health addressed the meeting concerning reporting of birth by attendants and parents of children thereby raising the percentage of births reported. East Feliciana Parish is one of the parishes selected to initiate this system.

Dr. E. M. Robards discussed tuberculosis from x-ray interpretation of the lungs of a patient.

Both speakers were extended a vote of thanks for presentation of these subjects. A vote of thanks was also given Dr. Glenn J. Smith and Staff for the excellent entertainment and dinner given the society.

SOUTHERN BAPTIST HOSPITAL

A clinical staff meeting of the Southern Baptist Hospital was held on Tuesday, October 23 at 8 o'clock. Dr. R. O. Harris gave a case report of "Migraine Headaches Followed by Sudden Death." Dr. Howard Mahorner spoke on "Restoration of Continuity after Resection of the Rectum" which was followed by a motion picture on abdominoperineal resection for carcinoma of the rectum, one stage operation, by Dr. Thomas E. Jones of Cleveland Clinic. The last discussion was the death report by Dr. Philip Tiller.

OCHSNER CLINIC

A meeting of the Ochsner Clinic staff members and Fellows was held on Friday, October 26 at 8:30 p. m. in the reception room of the Clinic. The following program was presented: Colonel Mims Gage spoke on "The Care of Paraplegics"; Dr. George Burch spoke on "Demonstration of New Plethysmograph for the Study of Peripheral Blood Vessels" and Dr. Dean Echols discussed "Herniation of the Temporal Lobe into the Cerebellar Fossa."

NEWS ITEM

The generosity of the Henderson family towards Tulane is further exemplified by the announcement by President Harris of a bequest by Miss Sarah Henderson of $1,075,000 for the endowment of the Chair of Tropical Medicine and for the improvements and changes in that Department. The receipt of this gift will further enhance the resources of the Department of Tropical Medicine so that it may become ultimately, as it is hoped, the outstanding Department in any American University Medical School.

Dr. Samuel B. Nadler attended a round table discussion of the Seventh District Medical Society in Rayne, Louisiana on Thursday, October 4. The title of Dr. Nadler's talk was "Headache."

Dr. William B. Clark, professor of ophthalmology, Tulane University, has just returned from Yepocapa, Guatemala, where he spent six weeks instituting a research project in the cause of blindness in patients infected with onchocerciasis in Guatemala. This project is sponsored jointly by the Caribbean sector of the Pan American Sanitary Bureau and the Department of Health of Guatemala. The project is being continued in Dr. Clark's absence, by Dr. Bertha Riveroll Noble of Mexico City, D. F., who was a former Pan American Kellogg Foundation fellow in ophthalmology at Tulane University from 1943 to 1945. Dr. Clark will return to Guatemala in January, 1946, to close out or continue the project as the results of the investigation justify.

Smith, Kline, and French Company has made a grant of $5000.00 to the Alton Ochsner Medical Foundation for research in chemistry, according to Dr. Thomas Findley, the Research Director of the Foundation. This fund will be used to continue the work on enzymes which is being done by Dr. Otto Schales, Director of the Chemical Research Laboratory.

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE
SOUTHERN SECTION

A meeting of the Society for Experimental Biology and Medicine was held on Friday, November 9 at 8:00 p. m., in the Richardson Memorial Building on the uptown Tulane campus. The following papers were presented:

1. Toxicity of Nicotinic Acid and Some of its Derivatives, by F. G. Brazda and R. A. Coulson, Department of Biochemistry, L. S. U. School of Medicine.

2. A Simple Method for the Determination of Glucose in Blood, by Otto Schales and Selma S. Schales, Chemical Research Laboratory of the Alton Ochsner Medical Foundation.

3. Reaction of Nerve to Restriction of Growth by Ligature, by D. Duncan (introduced by H. A. Davis), Department of Anatomy, L. S.U. School of Medicine.

4. The Effect of Experimental Arteriovenous Fistula on Circulation Time and Auricular Pressure in Dogs, by E. C. Heringman, H. A. Davis, and J. C. Rives, Department of Surgery, L. S. U. School of Medicine.

5. The Effect of Partial Hepatectomy Upon the Metabolism of Alpha-Estradiol, by Albert Segaloff, from the Alton Ochsner Medical Foundation and Department of Medicine, Tulane University School of Medicine.

6. In Vitro Susceptibility of Histoplasma Capsulatum, by John H. Seabury (introduced by H. A. Davis), Department of Medicine, L. S. U. School of Medicine.

7. (Read by title): Spinal Fluid Protein in the Retrospective Diagnosis of Subclinical Poliomyelitis, by W. B. Andelman, William I. Fishbein and A. E. Cases, Chicago Board of Health and the Birmingham Baptist Hospital.

A short business meeting was held at 7:45 p. m.

MILITARY PROMOTIONS

Information has been received that Raphael S. Hernandez, of Duson and Edwin S. Kagy, of New Orleans, have been promoted from Major to Lieutenant Colonel in the U. S. Army.

Major John C. Swartzwelder, Sn C., of New Orleans, has been assigned to Camp Shelby, Mississippi.

Captain James W. Vaudry, MC., of New Orleans, has been assigned to McCloskey General Hospital, Temple, Texas.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC.

The next written examination and review of case histories (Part I) for candidates will be held in various cities of the United States and Canada and by special arrangements at Army and Navy Stations on Saturday, February 2, 1946 at 2:00 P. M. Candidates who successfully complete Part I examination proceed automatically to the Part II examination held later in the year. All applications for this year's examinations must be in the office of the Secretary by November 1, 1945.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh, 6, Pennsylvania.

INTERNATIONAL COLLEGE OF SURGEONS

The tenth annual convention of the International College of Surgeons will be held at the Mayflower Hotel, Washington, D. C., on December 7 and 8, 1945. A scientific program has been arranged for both days.

ASSISTANTSHIP DESIRED

A member of the State Society, recently discharged from military service, is desirous of securing an assistantship with a diplomate in either otolaryngology or ophthalmology or both. If interested in securing the services of such an assistant kindly communicate with the office of the Journal, 1430 Tulane Avenue, New Orleans, for further information.

SOUTHERN MEDICAL ASSOCIATION MEETING

At the meeting of the Southern Medical Association in Cincinnati, Ohio, November 12-15, 1945, the following Louisiana doctors were on the program.

Section on Medicine: Dr. G. A. Goldsmith gave the Chairman's Address which was entitled "Importance of Vitamins of the B Complex in Clinical Medicine." Drs. W. A. Sodeman and Vincent J. Derbes spoke on "The Febrile Asthmatic."

Section on Physical Medicine: Dr. Nathan H. Polmer delivered the Chairman's Address, the subject being "Simon Baruch, Father of American Hydrotherapy."

Section on Surgery: Dr. Robert A. Robinson spoke on "Surgical Complication of Amebiasis."

Section on Obstetrics: Dr. Woodard D. Beacham gave a paper on "Study of the Abdominal Pregnancy Cases Managed at the Charity Hospital at New Orleans, and a Review of the Literature."

Section on Anesthesiology: Dr. John Adriani gave the Chairman's Address on "Some Practical Aspects of the Chemistry and Pharmacology of Local Anesthetics." Dr. Ray T. Parmley gave a lantern slide demonstration of "The Use of Saddle Spinal in Obstetrical Analgesia."

At a meeting of the American Society of Tropical Medicine which met conjointly with the Southern Medical Association, Dr. Ernest Carroll Faust gave a talk on "The Diagnosis of Schistosomiasis Japonica, the Symptoms, Signs and Physical Findings Characteristic of Schistosomiasis Japonica in a Native Family on Mindanao, Philippine Islands."

INFECTIOUS DISEASES IN LOUISIANA

The weekly morbidity report for the State of Louisiana for the week ending September 1 contained information concerning number of venereal disease cases, listing 1,456 of gonorrhea, 774 of syphilis, and five cases of lymphopathia venereum. Other diseases reported in numbers larger than ten were as follows: 147 of cancer, 121 of unclassified pneumonia, 74 of pulmonary tuberculosis, 39 of chancroid, 24 of granuloma inguinale, 22 each of pneumococcic pneumonia and rheumatic fever, and 12 of endemic typhus fever. This week there were seven cases of poliomyelitis reported; two in Caddo and two in Claiborne Parishes, one in St. Tammany and one in Bossier and one out of the state. Five cases of malaria were reported, one contracted within the continental U. S., two outside continental U. S., and place of contraction of two was not stated. There were more cases of influenza reported for the week ending September 8 than of any other disease; 139 cases listed. Other diseases included 19 of malaria, 18 of septic sore throat, 16 of pulmonary tuberculosis, 13 of scarlet fever and unclassified pneumonia, and 12 of endemic typhus fever. Of the malaria cases reported, eight were contracted within continental U. S., four outside of continental U. S., and place of contraction of seven was not stated. There was one case of meningococcus meningitis reported in Orleans Parish; one of pellagra in Calcasieu; four of poliomyelitis in Caddo and one of poliomyelitis in Calcasieu, Lincoln and St. Landry Parishes. For the week ending September 15 there were reported 38 cases of malaria, 35 of which were contracted within the continental U. S. The same number of cases of pulmonary tuberculosis were reported this week and also 30 of bacillary dysentery, 21 of septic sore throat, 14 of endemic typhus fever, 13 of diphtheria and 11 of influenza. One case of meningococcus meningitis was reported from both Orleans and Washington Parishes. The report for the week which terminated September 22 listed 55 cases of pulmonary tuberculosis, 34 of influenza, 20 of whooping cough, 16 of endemic typhus fever, 15 of diphtheria, 12 of scarlet fever and 10 of poliomyelitis; this last disease being reported, one case each, from seven parishes, two from one parish, and one from out of the state. There were five cases of undulant fever reported from Calcasieu Parish this week. The last report received which was for the week ending September 29, included the following diseases in numbers greater than ten: endemic typhus fever 29, influenza 26, septic sore throat 25, diphtheria and malaria 23 each, pulmonary tuberculosis 20, scarlet fever 16, and bacillary dysentery 13. Eighteen of the cases of malaria were contracted within continental U. S. One case of meningococcus meningitis and one case of poliomyelitis were reported from Jefferson Parish.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported that for the week which closed September 22 there were 121 deaths in the City of New Orleans, 79 of whom were white and 42 colored. Thirteen of these deaths occurred in individuals under one year of age; nine white and four colored. The next week, ending September 29, there were 126 deaths reported; 83 white and 43 colored, 15 of whom were in infants, divided almost equally between the two races. The report for the week which closed on October 6 showed a decrease in the number of deaths, there being only 103 listed this week. The deaths among the white population numbered 66 and the non-white 37. Only five infants expired this week; three white to two colored.

WOMAN'S AUXILIARY

Following are the officers of the Woman's Auxiliary to the Louisiana State Medical Society for 1945-46:

Officers

President—Mrs. Paul G. Lacroix, 3132 State Street Drive, New Orleans.

President-elect—Mrs. Arthur Long, 1367 Steele Drive, Baton Rouge.

First Vice-President—Mrs. Carroll Gelbke, 44 Willow Drive, Gretna.

Second Vice-President—Mrs. O. B. Owens, 1931 Military Highway, Pineville.

Third Vice-President—Mrs. B. C. Garrett, 4700 Fairfield Ave., Shreveport.

Fourth Vice-President—Mrs. A. G. McHenry, 1810 Riverside Drive, Monroe.

Treasurer—Mrs. Richard Vincent, 1441 Eleonore Street, New Orleans.

Recording Secretary—Mrs. Frank Jones, 810 Park Blvd., Baton Rouge.

Corresponding Secretary—Mrs. Willard Wirth, 402 Vincent Avenue, New Orleans.

Chairmen of Standing Committees

Archives—Mrs. Ansel Caine, 5301 St. Charles Avenue, New Orleans.

Bulletin—Mrs. Earl Clayton, Norco.

Cancer Control—Mrs. Herman B. Gessner, 119 Audubon Blvd., New Orleans.

Doctor's Day—Mrs. Geo. J. Taquino, 18 Fontainbleau Drive, New Orleans.

Finance—Mrs. Donovan C. Browne, 4920 St. Charles Ave., New Orleans.

Historian—Mrs. John S. Dunn, 8410 Pontchartrain Blvd., New Orleans.

Hygeia—Mrs. Leo. J. Kerne, Thibodaux.

Indigent Widow's Fund—Mrs. Aynaud Hebert, 2013 Napoleon Ave., New Orleans.

Legislation—Mrs. C. Grenes Cole, 4938 St. Charles Ave., New Orleans.

Organization—Mrs. Arthur Long, 1367 Steele Drive, Baton Rouge.

Parliamentarian—Mrs. A. A. Herold, 1116 Louisiana Ave., Shreveport.

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Program—Mrs. J. E. Heard, 512 McCormick Street, Shreveport.

Public Relations—Mrs. Rhodes Spedale, 701 Eden Street, Plaquemine.

Red Cross—Mrs. William Kohlmann, 1330 Eleonore Street, New Orleans.

Revision of By-Laws—Mrs. J. Kelly Stone, 72 Fontainbleau Drive, New Orleans.

War Participation—Mrs. Clarence Erickson, 423 Herndon Ave., Shreveport.

Councilors

First District—Mrs. Jules Myron Davidson, 100 Fontainbleau Drive, New Orleans.

Second District—Mrs. Roy B. Harrison, 2327 Napoleon Ave., New Orleans.

Third District—Mrs. Jules E. Dupuy, New Iberia.

Fourth District—Mrs. William J. Sandidge, 522 Stephenson Street, Shreveport.

Fifth District—Mrs. DeWitt T. Milam, 1704 Island Drive, Monroe.

Sixth District—Mrs. Marquis C. Wiginton, Hammond.

Seventh District—Mrs. Olin Moss, 2011 Shell Beach Drive, Lake Charles.

Eighth District—Mrs. Hiram O. Barker, Horseshoe Drive, Alexandria.

Advisory Board

Dr. W. R. Metz, Chairman, New Orleans; Dr. King Rand, Alexandria; Dr. Rhodes Spedale, Plaquemine.

BOOK REVIEWS

Trauma in Internal Diseases; With Consideration of Experimental Pathology and Medicolegal Aspects: By Rudolf A. Stern, M. D. Foreword by Francis Carter Wood. New York, Grune & Stratton, 1945. Pp. 575. Price, $6.75.

This unusual condensed volume of 575 pages lives up to its title remarkably. Interestingly, it presents in a readable manner, amply illustrated by case reports, the medicolegal aspects of traumatic relationship to the entities encompassed by the internist.

To the reviewer it is remarkably educational. The author unfolds the controversial aspects of the laws governing compensation and further emphasizes the complicity of trauma as related to internal medicine since the relationship is so less obvious than in surgical disease.

Following the introduction are twenty chapters each of which covers a different aspect of internal medicine. The first chapter covers the infectious diseases and here the reviewer finds to his surprise a developed issue showing the possibilities of cause or spread of infection by any of three manners: creation of entry portal, traumatically rendered susceptible tissue permitting localization and trauma to previously infected tissue accentuating the pre-existant disease process.

The cardiologist finds his field amply covered in four chapters entitled: diseases of the heart, arterial diseases, diseases of the veins and essential hypertension. Remarkable completeness in relation to all cardiovascular entities is noted. In addition seven pages are devoted to aggravation of circulatory diseases by trauma.

The sixth chapter reviews pulmonary disease while the seventh chapter is devoted to entities involving the pleura. A supplement considers mediastinal involvement.

The gastroenterologist finds an elaborate nine chapters devoted to his specialty under the headings of esophageal, gastroduodenal, intestinal, appendiceal, peritoneal, hepatobiliary and pancreatic disease.

An elaborate 46-page section creates a relationship of renal diseases to trauma.

The traumatic genesis of malignant neoplasm is remarkably abbreviated into a six-page seventeenth chapter.

Defective metabolism and endocrinopathy, each enjoys adequate consideration.

The final chapter is devoted to hematologic and lymphatic disorders.

It becomes apparent from the above that all branches of internal medicine have their medicolegal aspects. Anyone can easily benefit from a review of this authoritative text. It will serve as an excellent reference as is illustrated in that the bibliography covers fifty-nine pages.

At this present time when many of us will be asked an opinion on disease entities concomitant, coincidental or resulting from defense industries and from actual combat duty it will serve us well to have the knowledge of this reference to protect our conclusions.

The author is to be complimented on the timely publication of a voluminous, authoritative study that should enjoy excellent reception by the profession.

Gordon McHardy, M. D.

Fundamentals of Pharmacology: By Clinton H. Thienes, M. D., Ph. D. New York, Paul B. Boeber, Inc. Pp. 497. Price, $5.75.

As expressed in the editor's preface, this is one of a series of textbooks designed for medical students in which no attempt has been made to treat the subject exhaustively. On the contrary it has been the object to include essential information on the subject within limits compatible with the time available to students involved in an expanded curriculum. In spite of this fact the scope of the book in comparison with other texts, has not been appreciably curtailed since in addition to consideration of the drugs in common use it includes sections on hormones, vitamins, pharmacy and prescription writing. Also an interesting and valuable innovation is the section on "Actions of Drugs on Cells" in which drug action is discussed from the standpoint of cellular structure and metabolism. Although this is a field of study still in its infancy it promises to assume increasing importance in pharmacology as knowledge of the normal structure and metabolism of the cell increases. Consequently, it is essential that the student have at least an introduction to this subject. The arrangement of material shows certain innovations such as the discussion of stimulants of the central nervous system as the first section. Special minerals are interspersed with the hormones in appropriate relationships, iodides following the thyroid, calcium following the parathyroids and iron in close association with the antianemic principles of liver and stomach. Uusually in the discussion of each drug emphasis is placed upon pharmacodynamics or action. In addition manifestations of toxicity and therapeutic uses are discussed briefly and official preparations with dosage are cited. As is common in first editions there are certain errors and mis-statements. Questionable statements may also be found. The latter are almost unavoidable in attempting to present all pertinent information with a minimum of discussion. The adequacy of this book will depend largely on the purpose for which it is used or on the demands which are made of a text. In it the student will find the essentials of pharmacology presented in a concise form sufficient for him to meet the requirements of his professor in medical school. He however will find it deficient if he wishes to use it as a source of information which would supplement or extend that acquired in his didactic courses.

Ralph G. Smith, M. D.

A Textbook of Ophthalmology: By Sanford R. Gifford, M. A., M. D., F. A. C. S. 3d ed. rev. Philadelphia, W. B. Saunders Co., 1945. Pp. 457. Price $4.00.

This third edition is a fitting tribute to the memory of a truly great ophthalmologist. The table of contents has been amplified, the illustrations improved and the subject matter revised in an orderly and up-to-date manner. Illustrating the progressive trend of this volume is the emphasis placed on the frequence, importance and recognition of degenerative diseases in ophthalmology. The classification of retinal vascular scleroses is more complex and less complete than desirable.

Primarily intended for undergraduate instruction, revisions are including more material which adapts itself for simple, postgraduate teaching; such are the descriptions of the Maschek, Blascovics, and Dicky operations for ptosis. The author's encyclopedic knowledge of ophthalmology and wide clinical and teaching experience reflect themselves in the personality of this small volume of four hundred and fifty pages.

This book will probably become the outstanding textbook in its group partly because future revisions will be edited by Francis H. Adler, one of America's ace ophthalmologists and writers.

Chas. A. Bahn, M. D.

Trichinosis: By Sylvester E. Gould, M. D., Springfield, Ill., Charles C. Thomas Co., 1945. Illus. Pp. 356. Price $5.00.

The 290 pages devoted to material in this 356 page book contain the complete story of this cosmopolitan disease. Only one thing is lacking which physicians are constantly seeking, namely the recommendation of an efficient form of treatment. This is certainly not the fault of the author, as all known methods of treatment are impartially reviewed.

Profusely illustrated with superb photographs and diagrams, the book represents a treatise on the subject without rival. It is a complete guide to the pathology, diagnosis, current treatment and prevention of trichinosis. Diagnostic methods are reviewed dispassionately and the varied symptomatology is thoroughly discussed.

Reference is made more than once to the fact that both the discovery of the causative organism and the recognition of the eosinophilia which usually accompanies the disease were made by undergraduate medical students James Paget in England and Thomas Brown at Johns Hopkins. Rarely are the names of Virchow and Zenker associated with this disease but their contributions to the knowledge of it were very important. This book may be recommended without reservation.

Arthur J. Walker, M. D.

A Manual of Surgical Anatomy: By Tom Jones and W. C. Shepard. Philadelphia and London, W. B. Saunders Company, 1945. Pp. 195. Price $5.00.

This unique manual should prove of great value to members of the Medical Corps of the Armed Forces confronted with war surgery, which, unlike elective surgery, deals with bizarre wounds affecting all parts of the human body in rather unorthodox manner.

Although the predecessor of this volume, published in 1918 — late in the course of World War I — was an excellent, concise anatomical atlas, the present issue is truly a manual of surgical anatomy with practical emphasis on surgical considerations.

The excellent portrayals of various body regions are represented from the view in which the surgeon is likely to see tissues and organs through standard and most scientific or anatomic incisions.

The 267 splendid diagrammatic illustrations in pen and ink with color, in excellent perspective, although unaccompanied by text, speak for themselves. They will afford the user a speedy, yet adequate recollection of forgotten points of anatomy and guide him in planning the most anatomic approaches and in exercising regard for optimum conservation of tissue and preservation of function.

This manual of surgical anatomy will be of value not only to the young or even the experienced war surgeons for their necessarily hasty precursory review, but likewise will be welcomed by civilian physicians and prove to be an excellent guide in the more formal and more leisurely courses in surgical anatomy in medical schools.

This work is indeed a valuable contribution to the war effort by two very accomplished artists, Messrs. Tom Jones and W. C. Shepard, their publishers, and the members of the Committee on Surgery of the National Research Council's Medical Science Division.

HANS-KARL STAUSS, M. D.

Yellow Magic: The Story of Penicillin: By J. D. Ratcliff. Random House, New York, 1945. Pp. 173. Price $2.00.

This story of the discovery, isolation, large-scale production and clinical application of penicillin is told in the manner of a novel. The tale of the part played by each investigator is told in a very dramatic and personal manner colored by the imagined emotions of the worker. The work is somewhat marred by constant use of "staphs" and "streps", apparently intended to be plurals of the abbreviations staph. and strep., and by gratuitous bits of medical misinformation such as: a description of one organism (*B. brevis*) secreting a substance to cause shrivelling of a pneumococcus in a stained smear, the finding of staphylococcus "colonies" in a blood smear, and attributing clubbed fingers in subacute bacterial endocarditis to embolism. These are apparently due to desire to attain a dramatic effect even at the expense of accuracy. With the exceptions of such extraneous details the work is a fair history of the development of the drug. As a book intended for the layman it has no more medical errors than the average of such works and is a good book of this class.

FOSTER N. MARTIN, JR., M. D.

Arthritis and Allied Conditions: By Bernard I. Comroe, A. B., M. D., F. A. C. P. 3d ed. enl. Philadelphia, Lea & Febiger, 1944. Pp. 1359. Price $12.00.

The third edition of this standard text by Bernard I. Comroe, Chief of the Arthritis Clinic at the Hospital of the University of Pennsylvania, is bigger and better than ever. No other volume approaches it in completeness and excellence. It is more profusely illustrated than ever and thirteen new chapters have been added to cover such subjects as penicillin, psychogenic factors in rheumatic diseases, rheumatic manifestations in tropical diseases, the effect of climate on arthritis, and so on. The sections on treatment with gold and sulfonamides have been rewritten. In a sense it is almost a textbook on medical orthopedics since it contains chapters on traumatic arthritis, the painful shoulder, Dupuytren's contracture, painful feet, backache, sciatica, tumors of joints and tendon sheaths. Physical and surgical therapy are discussed in detail. The chapter on radiology, both diagnostic and therapeutic, is well illustrated.

The book is thus of interest to the specialist as well as to the general practitioner. Of particular value to the latter are chapters on the diagnostic digest of the average arthritic problem and on the differential diagnosis of rheumatoid arthritis. Since the book is a very large one, box summaries have been liberally sprinkled throughout the text which serve as compendiums of essential and practical information. Detailed instructions regarding treatment in its various forms are clear and specific. The soundly conservative views of the author are particularly valuable. This book is thus far the definitive work on the baffling problem of rheumatic diseases.

THOMAS FINDLEY, M. D.

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ANNULAR AREAS OF PULMONARY RAREFACTION IN CHILDREN

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and
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NEW ORLEANS

Two decades ago lung cysts were regarded as rare, but with the increasing use of the x-ray annular areas of pulmonary rarefaction due to cysts or cyst-like changes are being discovered with considerable frequency. The literature on the subject, which is rapidly becoming voluminous, has been reviewed in several publications.[1, 10]

Studies show that cyst-like pulmonary cavities, which are not the result of the destruction of pulmonary tissue by suppuration, caseation, or parasitic infestation may be congenital or acquired and single or multiple. They vary widely in size and they may be completely or partially filled with fluid or gas. In the latter case fluid levels are discernible on chest films.

The pulmonary cysts which are considered to be congenital in origin are present at birth but they often escape detection until later in life. They are lined with cylindrical, cuboidal or flattened epithelium unless the lining membrane has been destroyed by secondary infection. In some instances the cysts produce no symptoms, but in other cases, cough, dyspnea and recurrent cyanosis may be noted. These severe manifestations are observed particularly in young infants with cysts which are expanding due to progressive inflation contingent upon a check-valve mechanism.

The detection of pulmonary cysts usually requires roentgen examination. On the x-ray plate the outline of the cyst is spherical or oval in both the postero-anterior and the lateral views. If the cyst is filled with fluid its contour aids in differentiating it from an encapsulated empyema, a condition which is more apt to have a triangular, fusiform or irregular shape.

Large cysts which occupy almost the entire hemithorax and contain air under sufficient pressure to displace the mediastinum may be confused with a tension pneumothorax. The absence, however, of a shadow of the collapsed lung in the region of the pulmonary hilum aids in ruling out the latter condition.

Like other cysts with an epithelial lining, the congenital cysts do not disappear spontaneously. For recovery their removal is required. Since there is often no definite line of cleavage around the cyst, lobectomy usually is the procedure of choice. If possible the operation probably should be deferred until the patient is two or more years of age.

An example of a congenital lung cyst seems to be provided by the first case reported in this paper. The patient, a slender five year old white female was referred to Charity Hospital for diagnosis and treatment owing to the presence of a large annular area of decreased density discovered in the upper lobe of the left lung as the result of a routine x-ray examination made prior to tonsillectomy (fig. 1). The removal of the tonsils was being considered in this instance on account of the patient's poor appetite and moderate undernutrition. Although the cyst was quite large it had not caused cyanosis, dyspnea, hemoptysis, chronic cough or any other symptom suggesting its presence. Since there was no antecedent history of severe respiratory infection or any other factor to which the area of rarefaction could be attributed, the cyst was considered to be congenital in origin.

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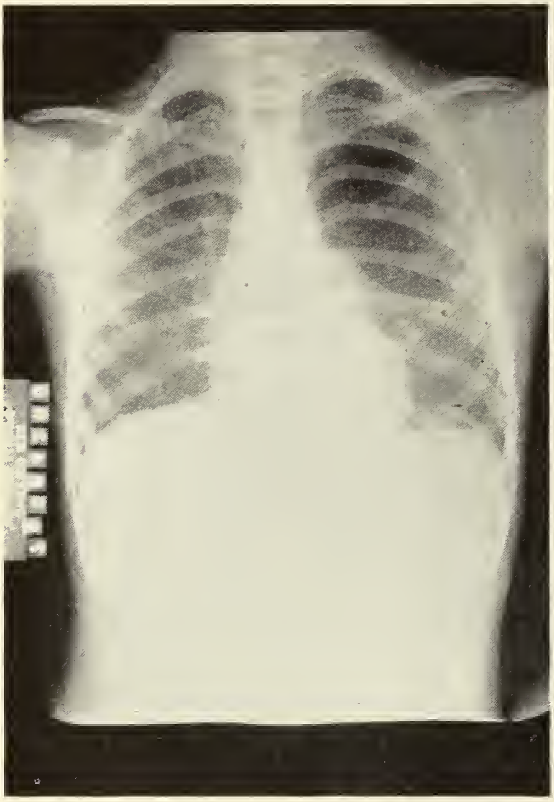

Figure 1. Congenital cyst of upper lobe of left lung.

The examination of the child's blood and urine revealed no abnormality, and the Wassermann and Mantoux tests were negative. The abnormal physical findings were limited to the thorax. On deep inspiration the expansion of the chest was symmetrical. Percussion disclosed distinct hyperresonance over the left upper hemithorax and the breath sounds were diminished in this area.

Six weeks after the patient's admission to the hospital a unilocular air-containing cyst measuring 4 x 4 x 1 cm. was enucleated under endotracheal anesthesia and the child made an uneventful recovery. At the time of operation no communication between the cyst and ramifications of the bronchial tree could be demonstrated. On microscopic examination the wall of the cyst was found to be composed of fibrous tissue lined with a single layer of non-ciliated cuboidal epithelium. These observations and the absence of any history of pulmonary infection support the view the cyst probably was congenital in origin.

Cystic bronchiectasis is a second condition which some investigators regard as one form of congenital cystic disease of the lung. It is known, however, that cystic bronchiectasis may be secondary to chronic bronchial obstruction, and perhaps the majority of the cases owe their origin to this cause. These cystic dilatations are very susceptible to repeated infections which in turn favor progressive extension of structural changes in the lungs. Since cystic bronchiectasis does not respond to medical therapy the preferred treatment is lobectomy, lobulectomy, or pneumonectomy, depending on the extent of the involved area.

An example of cystic bronchiectasis secondary to chronic bronchial obstruction is provided by the second patient reported in this paper. This two year old colored female was admitted to Charity Hospital on account of fever, shortness of breath and a generalized edema of several days' duration. One month prior to admission this patient developed a respiratory infection which seemed to respond temporarily to one of the sulfonamides. According to the mother's statement the patient had been subject to repeated respiratory infections but there was no antecedent history of pneumonia, foreign body aspiration, dypnea or edema.

At the time of hospitalization the patient's rectal temperature was 102° F. and she was breathing with difficulty at the rate of 56 respirations per minute. A marked limitation of the expansion of the left half of the chest was observed during inspiration, and the percussion note was dull over the entire left hemithorax. In addition the breath sounds were faint or absent over this area.

The chest plate revealed a density throughout the lower three-fourths of the left hemithorax. This finding combined with the pronounced lateral deviation of the trachea, mediastinum and heart indicated the presence of an extensive empyema in the left pleural cavity. There was definite evidence of fluid in the abdominal cavity and the margin of the liver was palpable five centimeters below the costal arch. In addition a generalized anasarca was present.

The examination of the blood revealed a severe anemia and a leukocytosis of 26,000 with a relative increase in neutrophils. The sickling preparation was negative and the blood urea nitrogen was normal. The serum protein value was 5.1 grams with albumin and globulin levels of 2.4 and 2.7 grams, respectively. An abundance of albumin was present in the urine. On the basis of the foregoing findings a tentative diagnosis of post-pneumonic empyema complicated by anemia, hypoproteinemia and cardiac decompensation was made.

A diagnostic thoracentesis yielded a thick purulent fluid with packed cells, fibrin and other debris constituting more than 90 per cent of its volume. Gram positive cocci were demonstrated in this fluid but their identity was not established.

The initial therapy included the administration of sulfadiazine, blood transfusions, repeated thoracenteses and digitalization with cedilanid administered intravenously. A closed thoracotomy was performed on the patient's sixth day of hospitalization but since this procedure did not provide adequate drainage an open thoracotomy was resorted to. At the conclusion of two months of therapy the child's condition was greatly improved and the gradual subsidence of the empyema disclosed the presence of several annular areas of rarefaction in the upper left lung field. In addition the presence of a bronchial fistula was demonstrated.

Owing to the persistence not only of drainage from the thoracotomy incision but also of the cyst-like areas in the lung and the bronchial fistula a pneumonectomy was performed seven and a half months after the child's admission to the hospital. The lung weighed 165 grams. The pleura was greatly thickened and a vacity attributed to an old empyema pocket was found in the inter-lobar fissure. The lower portion of the lung was composed of a dense fibrous atelectatic mass, whereas numerous cysts, the largest measuring 4 cm. in diameter, occupied the upper portion of the lung. Many of these cysts communicated with bronchi. They were lined with bronchial epithelium resting on connective tissue in which some evidence of inflammation was noted. On the basis of these findings the child's illness was attributed to an infection superimposed on congenital cystic disease of the lung. However, a few days later, when the lung specimen was being prepared for mounting, a small bean, lodged in connective tissue, was discovered in the upper left bronchus (fig. 2). In view of this finding the child's pulmonary disease was finally attributed to infection superimposed upon an acquired cystic bronchiectasis, rather than upon congenital lung cysts. This case illustrates the variety of serious complications which may accompany infection superimposed on a cystic bronchiectasis caused by foreign body as well as the difficulties which may attend the correct identification of the etiology of pulmonary changes which have the appearance of cysts on x-ray plates. After a slow convalescence the child made an excellent recovery.

Non-tuberculous pulmonary cavities in children may be due not only to evacuation of lung abscesses but also to partial bronchial obstructions which result in the production of pneumatoceles involving anatomically related segments of the lung. As a rule cavities produced by lung abscesses diminish in size as the local inflammation subsides. Occasionally, however, they persist owing either to the extensive fibrosis of the adjacent pulmonary tissue or to partial or complete epithelization of the lining of the abscess cavity. Under these circumstances surgical intervention may be required particularly in instances where chronic inflammation and the development of bronchiectasis complicate the situation.

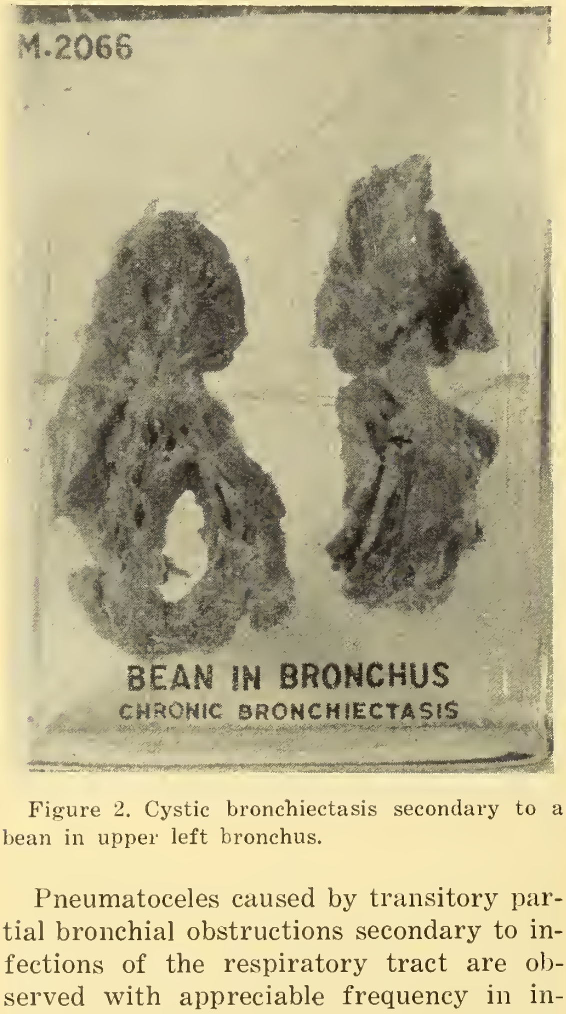

Figure 2. Cystic bronchiectasis secondary to a bean in upper left bronchus.

Pneumatoceles caused by transitory partial bronchial obstructions secondary to infections of the respiratory tract are observed with appreciable frequency in infants and young children. The pneumatoceles may attain huge size particularly in children, and occasionally display a tendency to undergo marked changes in size during the course of a few days. These cavities usually make their appearance when pulmonary infiltrations are resolving and their development is not accompanied by an abundance of purulent sputum or other signs indicative of extensive necrosis and liquefaction of pulmonary tissue. Furthermore these pneumatoceles are commonly discovered when the child is practically afebrile and is essentially free of pulmonary symptoms. Consequently by correlating clinical and serial x-ray findings areas of rarefaction due to transitory regional bronchial obstruction usually can be differentiated from chronic abscess cavities, lung cysts, and cystic bronchiectasis. This differentiation is important owing to the fact that pneumatoceles commonly disappear spontaneously in the course of a few weeks or months. Thus, they do not require the surgical measures that are needed for the cure of congenital lung cysts, chronic abscess cavities and cystic bronchiectasis.

An example of what is considered to be a pneumatocele is illustrated by observations on a three year old white female who entered Charity Hospital owing primarily to cough, dyspnea and epigastric pain which had developed during the past few days. According to the history the child had tonsillitis three weeks prior to admission and had continued to run daily elevations in temperature. There was no other history of any previous illness. The initial laboratory studies disclosed a leukocytosis of 13,800 with a relative increase in neutrophils. The examination of the urine and the Mantoux and Wassermann tests were negative.

X-ray examination disclosed a dense shadow throughout the lower left lung field and a shift of the mediastinum to the right. On thoracentesis 40 c. c. of serosanguineous fluid was removed. Its specific gravity was 1.015 and the sediment comprised about 5 per cent of its volume. The smears and cultures revealed no organisms. Subsequent thoracenteses were unsuccessful.

The child received intramuscular injections of 80,000 units of penicillin daily. Four weeks later, when the child was convalescing and the pulmonary findings were subsiding, a large annular area of rarefaction occupying the lower half of the left lung was revealed by x-ray study. The development of this cyst-like structure was not accompanied by any exacerbation of symptoms or expectoration of purulent material. Subsequent x-rays disclosed a gradual and complete disappearance of the empyema and pulmonary infiltration, but the area of rarefaction remained. Since the child was asymptomatic she was discharged to the out-patient department with a tentative diagnosis of pneumatocele or congenital lung cyst. Five months after leaving the hospital the x-ray plate revealed no evidence of the annular shadow. Its spontaneous disappearance provides strong evidence that the area of rarefaction was a pneumatocele.

Some of the difficulties encountered in diagnosis are also illustrated by observations on an undernourished five months old white female who was admitted to the hospital owing to a fever and cough which had persisted for three weeks following an attack of pneumonia. In this instance the urinalysis and the Mantoux and Wassermann tests were negative. A leukocytosis of 22,000 was present but there was no relative increase in neutrophils. On the basis of physical and x-ray findings the child was thought to have an unresolved pneumonia involving the lower half of the right lung. Following the administration of sulfadiazine the symptoms subsided and the pulmonary infiltration gradually resolved.

Twenty-four days after admission to the hospital and while the patient was convalescing x-ray study demonstrated a large cyst-like structure in the lower lobe of the right lung (fig. 3). The development of this cystic change was not accompanied by any exacerbations of symptoms or expectoration of purulent material suggesting the evacuation of an abscess.

Subsequently the child was discharged to the out-patient department for further observation and at the conclusion of fifteen months of follow-up study the cyst is still present but during this period the diameter of the area of rarefaction has diminished approximately 50 per cent. This change has not been accompanied by any appreciable alteration in the thickness of the distinct wall surrounding the area of rarefaction.

If further observation discloses the eventual spontaneous disappearance of this cyst-like structure it can be regarded as a pneumatocele. If, however, it persists it probably is a congenital lung cyst.

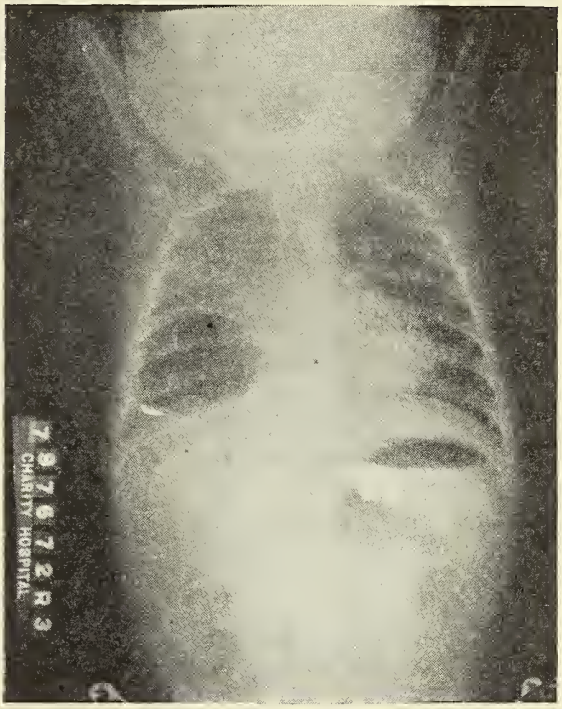

Figure 3. Pneumatocele or congenital cyst of the right lung.

SUMMARY AND CONCLUSIONS

Cysts and cyst-like changes in the lungs of children may be congenital in origin or secondary to aspirated foreign bodies, lung abscesses, and to partial bronchial obstruction associated with infections of the respiratory tract. Cysts which show no tendency to disappear and are present in the lungs of children who have no previous history of respiratory infection or foreign body aspiration probably are congenital in origin in most instances.

Cystic bronchiectasis due to a foreign body may be confused with congenital cystic disease of the lungs. An antecedent history of foreign body aspiration is of great value in making a differential diagnosis, but unfortunately this event is not witnessed in all instances in which it occurs.

Congenital cysts and cystic bronchiectasis have several features in common. Both of these conditions may be complicated by infection and recovery requires the removal of the area of involvement in each instance.

Pneumatoceles and cavities representing

evacuated lung abscesses are inclined to disappear spontaneously in the course of weeks or months. Consequently protracted follow-up studies aid in differentiating these conditions from congenital cysts and cystic bronchiectasis, both of which persist indefinitely. The four cases reported in this paper illustrate some of the difficulties which attend diagnosis, particularly when infection accompanies the presence of cyst-like changes in the lungs of children.

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SOME PRINCIPLES OF GENETICS

HAROLD CUMMINS, Ph.D.†
NEW ORLEANS

The branch of biology which concerns itself with the similarities and differences among individuals and the phenomena of inheritance and environment which condition these similarities and differences is known as genetics.

From our point of view, the subject matter of chief interest may be described as medical genetics because we are chiefly concerned with those phases which bear upon an understanding of the human being in health and disease. A prevalent mistaken notion about the scope of medical genetics should be corrected. To many the term suggests no more than a consideration of the genetics of disease. In truth, medical genetics is as much concerned with longevity, hardihood and resistance to disease as it is with hare lip, hemophilia, schizophrenia and a host of other manifestations of heritable diseases and susceptibilities to disease.

HEREDITY

The fact that each type of organism—human beings, rats or flies—reproduces only its own kind is so commonplace that one is likely to give little thought to it. Human reproduction yields only human beings, rats bring forth only rats, and flies breed more flies because the reproductive cells contain inherited factors of the one species alone. Every one of us, besides possessing the traits which set apart mankind as a unique species, has traits which are distinctive of his race and family. The inherited qualities are not confined to physical features; many physiologic and psychologic traits as demonstrably inherited as eye color and hare lip.

The word congenital means "born with." An infant presenting at birth a malformation, for example, may be described as having a congenital defect, but that defect may or may not be hereditary. On the other hand, many inherited traits are not expressed at birth. It would be obviously impossible to recognize in the newborn a prospective heritable disease, or susceptibility to a disease such as rheumatic fever, which is tardy in its manifestations. As an example of an hereditary defect thus delayed in expression, atrophy of the peroneal muscles as reported by Macklin and Bowman may be mentioned. A family characterized by peroneal atrophy was traced through five generations. The onset of atrophy usually occurred within the age range of 10 to 20 years, but occasionally an affected individual did not exhibit muscular atrophy until he reached an age of about 40. In this family the trait was inherited as a dominant. Hence an individual carrying the factor for peroneal atrophy, though as yet unaffected and reproducing with a normal mate, will have children of whom half are predestined to the crippling effects of this condition. Over a thousand cases of peroneal atrophy are on record in the state of North Carolina, representing more than one hundred family lines with from five to sixty affected members in each.

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ENVIRONMENT

The complex of traits present in an individual can not be wholly attributed to the action of hereditary factors. There are some characteristics—for example blood groups, eye color and a wide variety of conditions of special medical interest such as Huntington's chorea—which seem to be determined rather inflexibly by heredity. But for most traits the hereditary mechanisms are subject to influence by environmental factors, and a trait may or may not appear as anticipated because of this lability of the mechanisms which condition it.

Just what do we mean in considering environment as an agency that may cause a trait to differ from the hereditary expectation? Environment comprises, first, all conditions external to the individual: the dietary supply, temperature, light and various other radiant energies, the pressure and gaseous content of the atmosphere, relationships in the family and society—and so on. In addition, the body itself constitutes an elaborate intrinsic environment, as might be illustrated by the production of secondary sexual characters and the regulation of growth by hormonal factors. There is still more to be considered with regard to the prenatal environment of the individual. The intrauterine environment is a potent source of modification of hereditary makeup, probably especially during the earliest weeks when the most critical developmental processes are under way. Reference may be made to congenital pyloric stenosis as an example of the effects of intrauterine environment. The condition has an hereditary basis, though the mode of inheritance is uncertain. It appears likely that innate predisposition alone may not elicit stenosis and that other factors must be superimposed as triggers of the hereditary mechanism.

One indication of the effect of environmental influences in pyloric stenosis is furnished by data on primogeniture. Whatever may be the predisposing conditions associated with the initial gestation period, it is definite that the proportion of cases in first-born children is higher than would be true if birth order had no bearing on the condition. Of the 405 cases reviewed by Ford, Ross and Brown, about two-thirds were born in Toronto, over a period of 25 years. For sound comparison, the proportion of first-born children with pyloric stenosis should be contrasted with the total of all first-born in the same city. Otherwise, discrepancies would be introduced by the trend toward larger families in rural sections of the province. The only available figures on the frequency of first-born children in Toronto were for three years (1928, 1933, 1937); for these years the average value (referred to the total of 11,497 births) was 41.2 per cent—to be compared with 51.8 per cent in the series of 278 Toronto-born patients with stenosis. The difference, 10.2 per cent, was shown to be statistically significant. Moreover, the data for other orders of birth showed no indication of a relationship between birth order and the incidence of pyloric stenosis.

Another item of evidence for the conclusion that environmental factors are important in etiology is the discrepancy between the frequencies of pyloric stenosis in twins and in the single-born. In one series of 1,000 infants with pyloric stenosis (Sheldon) and in another numbering 436 infants (Ford, Brown and McCreary) the proportion of twins to single births was about twice the expected number. The state of twinning is thus shown to introduce a definite hazard.

The correlation between the conditions of a twin pregnancy and the production of stenosis has its parallel in some other traits which depend upon an environment-sensitive hereditary determination. Handedness is a good example. Left-handedness is much more frequent in twins than in single-born individuals. There is presumably a variation in the strength of the hereditary control of handedness, and the individuals in whom the hereditary determination is not firmly fixed may suffer reversal from the prospective handedness, this being almost always from right-handedness to left-handedness.

Another striking proof of disturbed environmental relationships is supplied by observations on joined twins, popularly known as "Siamese twins." Here are two individuals with structural incompletenesses which vary according to the location and extent of their union and in whom hereditary prospects are always modified by environmental factors peculiar to their development as joined bodies. A pair of Siamese twins is produced from a single fertilized ovum, hence the hereditary composition is equivalent in the two members. However, in a careful examination many differences are noted between them. In physical features and in temperament the two components are more dissimilar than are most single-ovum twins. Among the common differences is the existence in one member of situs inversus viscerum, a mirrored transposition of the visceral relationships. Such transposition may result from alteration of the purely mechanical factors which condition the visceral asymmetries. We have in our embryological collection a 12 mm. pair in which the embryos are joined front to front. In this specimen it is clear that the reversed asymmetry of heart and gastrointestinal tract lends itself to this mechanical explanation; reversal of the organs in one member is at least the most effectual accommodation to the cramped quarters in which the organs of the two embryos are developing. In Siamese twins generally there are many other differences, involving remotely related parts that do not lend themselves to so simple an explanation, but the principle of disturbed environment holds for all.

Mention has been made of the intrinsic environment, and now it should be emphasized with regard to the intrauterine period. The embryo constructs a part of its extrinsic environment, the placenta and membranes, upon which the maintenance of its life processes depends. At the same time the embryo is engaged in building the body structures and in setting them to work. The embryo, like the child, is growing and differentiating. Prenatal growth advances at an amazingly rapid pace, producing a weight increase of about six billion times in the interval between fertilization and birth. But this growth rate, remarkable as it is, is no match for differentiation as contrasted in the embryo and child. Postnatal differentiations concern structures and functions for which the framework is already laid down prior to birth. In the main the structural foundation is completed in the first eight weeks of gestation, through a succession of developmental gradations from relatively simple structures to the more and more complex. These early weeks are critical indeed for the future welfare of the individual. Not only is the organism then especially sensitive to influences in its external environment but it is peculiarly vulnerable. The most active phases of differentiation are under way and, furthermore, interference with the normal progress of a localized region or an organ may lead secondarily to effects elsewhere, so closely interrelated are the developmental processes.

From these remarks on the embryo it should be apparent that agencies of the environment, both external to the embryo and within it, may either favor the embryo or place it under handicaps. Disfavoring influences are capable of modifying the hereditary prospects of structure and function and sometimes they even lead to death of the embryo.

There remains still another important segment of environment, and that is the environment of the gametes, the sperms and egg cells in the parent bodies. These cells, prior to their union in fertilization to form the fertilized egg, or zygote, are exposed in common with the non-reproductive cells (somatic cells) to the action of the external and internal environment. If the factors are extremely deleterious the gametes may be incapable of fertilization, or development may be arrested early. Development of the individual may proceed under milder environmental handicap, but characteristics differing from the genotype may be created. Among suggested disfavoring factors are syphilis, influenza, some metallic salts, x-rays and even the changes incident to advancing age of the mother. A delay in the meeting of sperm and egg may reduce cellular vitality to the point that fertilization is impossible or, if embryonic development ensues, departures from genotype may be produced.

We must not be over-confident in interpreting the extrinsic and intrinsic environmental effects on gametes and zygotes. Observations in man are very limited. Known conditions in the hog indicate the difficulties which stand in the way of identifying specific environmental agencies. In a pregnant sow the number of embryos commonly is less than the number of corpora lutea. When the pregnancy is advanced there is no sign indicating the fate of the eggs which did not produce embryos, but in early pregnancy their product may be discovered, in the form of blighted embryos undergoing absorption. Regional uterine pathology is ruled out as an explanation of the blighting of the embryos, and it is justified to assume that all the eggs and all the sperms concerned in the pregnancy had been exposed equally to the action of the usual environmental factors. Delay in fertilization possibly was responsible, though acceptable also as a speculation is the thought that gametes and zygotes simply differ in vigor, in this respect being like the organism as a whole.

Probably the most spectacular instance of an environmental effect on germ cells is furnished by the action of x-rays. The experimental work on this subject has been carried out especially in the fruit-fly, Drosophila, and in certain plants. The results are of interest in showing not only that the hereditary mechanism is altered in such manner that the organism differs conspicuously from the parent stock but also that it is so fundamentally affected as to transmit the new traits to the progeny. In other words, new traits known as mutations are created. Some of the new traits correspond to those already known to occur sporadically under natural conditions. X-rays increase the rate of production of such mutations, which in this experimental treatment occur with a frequency about 150 times greater than in nature. Radium rays, ultra-violet light and even heat may similarly increase the mutation rate. There are few opportunities to study the results of irradiation of the human sex cells. The sterility effects of repeated exposure to x-rays are well known, and it seems therefore plausible that there might exist an intermediate step in which the cells are altered in a way comparable to that which has been demonstrated experimentally in organisms other than man. Therapeutic dosages applied in early pregnancy are certainly capable of harming the embryo, and it seems likely that there is a critical level of dosage which might alter the sex cells. It might be remembered in this connection that irradiation of Drosophila had been applied with little result before Muller succeeded, in 1927, in devising the crucial technic which yielded a high mutation rate.

CONSTITUTION

The search for association between conditions of medical interest and other traits (whether structural, physiologic or psychologic) lies within the province of genetics, though generally we speak of it as being concerned with constitution. Draper[1] states that constitution "should connote that aggregate or herediterial characters, influenced more or less by environment, which determines the individual's reaction . . . to the stress of environment." Tucker and Lessa[2] supply a more satisfactory definition, on which the following statement is modeled. Constitution is the sum total of the structural, physiologic and psychologic characteristics of an individual, as conditioned by both hereditary factors and influences of the environment. It is true, as Draper says, that constitution determines the nature of the individual reactions to environment; but this element is not properly a part of the definition, which in the last analysis sums up to being nothing more than the genetics of the individual. We seek to explain how the individual came to be what he is, to determine the elements in heredity and in environment which have molded him. It is a never-ending search, since constitution is in a state of constant flux. Although the hereditary component was determined when sperm and egg cell met to initiate embryonic development, the impingement of environment is continually remolding the individual through his whole life history.

The occurrence of many a trait reflects an innate resistance or a tendency to a disease, though the trait in itself may be quite innocent of complicity. Had it not been proved, who would suspect that the virus of poliomyelitis makes its inroads especially with children whose susceptible constitution is reflected in these seemingly insignificant characteristics, among others: broad face, widely spaced central incisors, even peculiarities of finger-print types?

VALUES OF GENETICS

There are many arguments in favor of a study of genetics by medical men. The all-embracing principle that one should know as much as he can about the human organism is sound enough, but it is too general to be satisfying. A few of the more cogent values may be specifically stated.

(1). First, we may dispose of the long-range applications in mass betterment of the human race. This constructive effort is divided into two phases. Euthenics is designed improvement of the environmental faults which jeopardize normal, healthy existence. Public health and preventive medicine may be viewed as euthenics in practice, similar aims being extended beyond the medical sphere in the field of applied sociology. Eugenics is concerned with racial betterment from the standpoint of inherited traits. Certain physical and mental traits are of substantial worth to organized society, while others are undesirable. Just what characteristics would be sought for the benefit of society as a whole is a difficult problem to decide, but everyone will agree on some of them as representing an ideal. A few other traits would as surely be classed as undesirable eugenically, among them feeble-mindedness, epilepsy and disabling physical defects.

When Guyer phrased the title of his widely known book, "Being Well Born," he did not intend to suggest that being well born is to be born to a family having wealth and good social position. He was not writing about that sort of standard, nor about the mere tracing of illustrious names in genealogy. He was concerned with being well born in the biologic sense, that is, to be born of eugenically superior stock. The aim of eugenics is to promote reproduction of those individuals whose hereditary constitution promises benefit to society, and to prevent reproduction of those who will transmit deleterious traits to their offspring. Euthenics and eugenics should advance hand in hand, but there is more lag in eugenics because of social difficulties which stand in the way of progress. The small beginnings made by segregation of the eugenically unfit and by sterilization have not struck at the real heart of the matter. These efforts, which might be described as passive eugenics, must be supplemented by an active program of popular education.

So long as human nature is what it is, the final goal of eugenics may not be reached—but we can make our way slowly toward it. It is an ironic sidelight that so much has been achieved in breeding improvements of plants and animals to meet human needs—corn, and wheat, and hogs, and cattle—while so little attention has been paid in practice to the breeding of man himself. The success attained in agricultural breeding should be encouraging. The human stock could be improved from the inside if we would only apply the same laws of inheritance which have given us disease-resistant grains, grains that can withstand severe cold, cattle that are superior for beef or for milk yield, and all the other qualities which have bettered our living from the outside.

Passing from this admittedly millennial program of eugenics, several more immediate services of genetics may be cited. (The following passages are paraphrased from Snyder.[3])

(2). Genetics may aid in establishing a diagnosis, as exemplified in the following instance. In a case of polycythemia vera, for example, the diagnosis was at first uncertain on account of atypical elements in the syndrome; it was later substantiated by genetic findings. The diagnosis was agreed upon when the father of the patient was found to have 7,000,000 red cells, 17 grams of hemoglobin per 100 c.c., and myelocytes in the circulation. It is of interest also that a grandfather of the patient displayed erythremia.

(3). Genetics is of constant service in planning preventive measures. To give a specific example, a case of hemolytic icterus may be cited. "When seen at the age of 55, the patient had been suffering for a number of years from the incapacities of the disease, which had been unrecognized as the cause of his chronic invalidism. A splenectomy was done with good results." Had splenectomy been performed earlier the patient would have been spared the long period of disability. In view of the hereditary nature of hemolytic icterus, the seven sons of the patient were examined. None of them presented marked clinical symptoms, but five showed one or more of the laboratory signs, including microcytosis, increased fragility, increase in reticulocytes and secondary anemia. The sons were accordingly urged to submit to periodic examinations, so that treatment might be instituted promptly at need.

(4). Acquaintance with genetics equips the practitioner for giving sound advice in prospective marriages and pregnancies. The necessity of warning may be illustrated by the case of a hemophilic patient, with a positive family history, who stated that his three daughters had not been informed of the nature of his affliction and that they were not to be told. Failure to supply a warning that at least half of their sons would be hemophilic would have been inexcusable. Snyder relates the history of a young man who came to him for aid in a difficulty involving the inheritance of psoriasis. Though free himself, the disease was present in his grandfather, father, several brothers and sisters, and some nieces and nephews. His wife, then pregnant, had seen the afflicted relatives, and was obsessed with the idea that her child would have psoriasis. The fear so preyed on her that she was on the verge of a psychosis. Examination of the family history revealed that psoriasis never appeared in a child unless one of the parents had the disease. When one parent was afflicted about half of the children presented psoriasis. With these indications of a dominant heredity, it was possible to assure the distraught woman that her children would not inherit psoriasis.

THE METHODS OF GENETICS

For the analysis of basic genetic principles chief reliance must be placed upon the results of breeding plants and animals. The classic studies of Mendel, which formed the foundation for our present knowledge of heredity, were carried out mainly with peas, though he made use of other plants and of mice. Since his day investigators have worked with a wide variety of plants and animals. Such forms are well adapted to genetic research because they may be easily bred, and generation after generation may be followed in a relatively brief span of time. The fruit-fly, Drosophila, has proved itself a most useful subject of study. The fly breeds so rapidly that twenty generations may be obtained in a year. Further, the whole experiment may be controlled both as to selection of individuals for breeding and regulation of environmental conditions. Finally, observations on chromosomes may be correlated with the genetic behavior of the traits under study, thus furthering the understanding of the inheritance mechanism. It may seem a far cry from fruit flies to man, and so it is except that both obey the same fundamental laws of inheritance. Obviously, however, the known genetic behavior of white eyes in the fly, of vestigal wings, or of certain bristles will not tell us about the pattern of inheritance of a trait in man. It leads no further than the explanation of fundamental mechanisms, and if we are interested in the hereditary pattern of human traits it is necessary therefore actually to observe them in family material.

Many handicaps obstruct the collection of genetic data in man. The span of a generation is long and families are small, hence it is difficult to assemble extensive pedigrees for tracing the transmission of hereditary characteristics. There is of course no control of mating, such as may be readily applied in the breeding of plants and animals. Environmental circumstances also are beyond control, and indeed are even largely unknown. This latter deficiency is of great moment in many conditions of medical importance, wherein environmental factors may either exercise a trigger action on the hereditary mechanism or suppress its potential effects. To make the situation even worse for the student of human genetics, it is usually possible for him to examine personally only a small proportion of the individuals whose histories are pertinent. He is forced to record the remaining individuals as "unknown" with respect to the traits in question, else rely upon the statements of others as to whether these individuals are positive or negative. It is clearly apparent that unreliable diagnoses would seriously vitiate the record and its genetic interpretation. In spite of these and other difficulties, much has been done and much is being done with human genetics, including its medical aspects.

THE APPROACH IN HUMAN GENETICS

Several analytic methods are available in analyzing the inheritance of traits in man.

(1). The oldest and most familiar is the pedigree method, the construction of a family tree which shows the relationships of all members of the family who are accessible for record and indicating the status of each with regard to the trait which is being studied. By inspection of such a tree one may determine quickly the number of individuals affected, the manner of transmission from parent to offspring and the distribution by sex. All these items are essential to interpretation of the mode of inheritance. Of equal importance in those conditions where the hereditary mechanism is delicately responsive to environmental factors is a search for all possible agencies that might have favored or disfavored the expression of the inherited traits. The search is beset with difficulties.

The initiation of a study of this sort is often merely the arousal of scientific curiosity in one whose chief interests lie outside the field of genetics. As a case in point, and as an exemplar that should be followed by more medical men, I shall refer to a study published by Harvey Cushing in 1916. Ten years before this publication, Cushing was consulted by a woman with a cerebral glioma. He noted that her fingers could not be bent at the proximal interphalangeal joints. An uncle who accompanied her was likewise affected, and it developed that the family physician, also with the patient, had married her fifth cousin who had the same condition. This casual observation led to an extensive study of the family line. Records of 452 persons, representing seven generations, were obtained. It was shown that this ankylosis, or symphalangy, is inherited as a simple Mendelian dominant, the offspring of affected individuals thus having a 1:1 chance of presenting the anomaly.

Before leaving the subject of family trees it must be stressed that family incidence of a trait is not always a sign that the trait is inherited. Conformity of the distribution of cases to one or another of the recognized modes of hereditary transmission is of course suggestive that a trait is inherited, but the investigator is always watchful for environmental factors that may influence the inheritance, or perhaps even be responsible for the effects observed in a family group which is subjected to the same disfavoring environment. Night-blindness may be selected in illustration. In some families the defect appears to be inherited as a dominant trait, in others as a recessive and in still others a sex-linked recessive. Such inconsistencies of genetic behavior are not unknown in some other traits, but one wonders to what degree the dietary regime may figure as the cause of this irregularity in the mode of inheritance of night-blindness, if indeed in some family groups a deficiency might not produce a false appearance of inheritance.

(2). Consanguineous marriages may elucidate the hereditary mechanism, but only when the occurrence of the trait concerned is very rare in the general population (less than 0.1 per cent). When consanguineous marriages result in a high family incidence of traits so infrequent as this it is to be concluded that they are inherited recessively.

(3). Twins and other multiple births are a fruitful source of genetic information. Twins, in the restricted sense of a pair rather than a larger number of individuals produced in the same pregnancy, are of two main types. Dizygotic twins are the product of two zygotes, two fertilized eggs which jointly undergo their intrauterine development; such cases are appropriately termed two-egg, or dizygotic twins; sometimes they are called fraternal twins. The so-called identical, or better monozygotic, twins arise from a single fertilized egg. The production of two individuals instead of one from a single zygote results from fission of the embryo at a very early period. When separation of the two embryonic rudiments is incomplete the twins are united as "Siamese twins" or as some less fully duplicated type of double monster.

A prerequisite for reliable results in twin studies is assurance that the pairs of twins under investigation be correctly diagnosed as to zygotic origin. The usefulness of the twin material lies in the fact that the two members of a pair of monozygotic twins have an equivalent hereditary constitution, while dizygotic twins are generally like separately born siblings except that the two individuals have had more in common in their intrauterine and postnatal environments. Sound diagnostic methods are accordingly essential when twins are used in the analysis of genetic phenomena. One of the criteria of zygosity is sex, but its helpfulness is limited. If the twins are opposite-sexed the diagnosis of dizygosity is at once established, but same-sexed twins may be either monozygotic or dizygotic. In differentiating the two types of same-sexed twins special diagnostic procedures must be applied. The similarity method is based upon exacting comparisons of the two members of the pair. In certain traits unlikeness, or discordance as it is called by students of twins, would at once distinguish the pair as dizygotic. For example, if blood groups are discordant we can be as sure that the pair is dizygotic as if the pair were unlike-sexed. The mode of inheritance of blood groups, like sex, is such that two individuals arising from one zygote must be concordant. Unfortunately there are not many human traits that are so rigidly predetermined by inheritance, and unless there is discordance in such traits examination of the twins must be extended to a variety of other characteristics. The general principle of the similarity method is that twins which most closely resemble each other are monozygotic, to a high degree of probability. Twins which present larger differences are most likely dizygotic.

What can be done with twins as a source of genetic information? The possibilities of medical applications are almost unlimited. The observations will enable us to determine what traits are inherited and to evaluate the relative influences of heredity and environment. H. H. Newman, an active investigator of twins through many years, has gone so far in this test of the roles played by "nature" and "nurture" as to assemble a series of twins who were separated in infancy or childhood and raised in quite different surroundings.

Perhaps examples will supply a clearer picture of the methods employed in genetic analysis of twins. The gathering of even isolated records is profitable, as shown by the following cases. Champlin reports the development of sarcoma of the testis in both members of monozygotic twins. In the instance of one twin, sarcoma developed in the right testis at the age of 24; earlier, that testis had been traumatized. Operation was delayed, and the man died at 26. The other twin, in the absence of known trauma, developed at the age of 31 the same type of sarcoma, and like the twin brother in the right testis. The close correspondence of the pathology in these two young men suggests at once an hereditary background for the malignancy, and there is the further suggestion that its activation in the first case was hastened by trauma. The hereditary basis of neoplasia as revealed in twins could be illustrated by enumerating many instances, similar to those here listed, of correspondence of type and location in the two members of a monzygotic pair; retinal blastoma of the left eye; uterine cancers; ovarian cysts on the same side; cerebral gliomata; malignant ovarian teratomata; adenomata located in the same quadrant of the left breast, appearing in both twins at the early age of 21.

Studies of mass samples of twins are more fruitful. Let us turn to such a study, in this instance one designed to yield a measure of the parts played by heredity and environment in schizophrenia. Much work has been done on the genetics of schizophrenia, and that there is often an hereditary basis is well recognized. This example is therefore chosen only to show the twin method in operation. Rosanoff assembled a series of twins in which one or both members presented the affliction. Among monozygotic pairs both members were schizophrenic in 68 per cent of the pairs, while in dizygotic pairs both members were schizophrenic in but 15 per cent of the cases. There is thus shown a considerable degree of lability in the action of the hereditary factors. If their effects were inevitable, schizophrenia would have occurred in 100 per cent of the monozygotic pairs instead of 68 per cent. Further, an incidence of 15 per cent of doubly affected dizygotic pairs is rather too high to be explained by an independent hereditary determination, showing that environmental experience shared by the two members of a pair must have increased the occurrence of schizophrenia beyond the hereditary expectation. The findings again bring emphasis to the interplay of heredity and environment as agents in the constitution of an individual.

Another illustration of the method, applied to a different pathologic trait, may be of interest. I have chosen Lemser's study on diabetes mellitus. This author, in addition to recording family trees which show hereditary transmission, reports on the occurrence of diabetes mellitus in 55 pairs of monozygotic twins and 79 pairs of the dizygotic type. Collection of the data on twins, as in the investigation of schizophrenia, consisted in a search for twins in which at least one member of the pair was affected. In Lemser's series 85.5 per cent of the monozygotics were concordant, that is, both members were diabetic; in the dizygotic only 29.1 per cent were concordant. Again it is evident that the conditioning of diabetes through heredity is not rigid. If diabetes were inflexibly determined by heredity 100 per cent of the monozygotic twins would be concordant. Of course, it is justified to assume that the as yet unaffected members of the discordant monozygotic pairs must be highly susceptible. Metabolic dysfunction might be readily precipitated in them by exposure to any of the factors which are of etiologic importance in diabetes mellitus.

(4). The discussion of family trees and of the special methods employed in twin studies has taken us a long way from our subject heading—namely, the approach in human genetics. We are now ready to resume the listing of the varied sources of genetic information in man. Several different sources remain unmentioned, but of these only one which is regarded as being of particular importance will be discussed. The experimental animal may be of service when the condition in question is of such nature as to admit comparison between animal and man. Thus, a large amount of evidence on the hereditary pattern of malignancy in rats and mice is available for supplementing observations on the genetics of malignancy in man. However, observations in animals can not be transferred blindly to an interpretation of human genetics, because species differences are known to exist. Cattle, for instance, differ from man in the genetics of malignancy of the mammary gland. Nothwithstanding that the mammary is a common site of malignancy in mammals generally, including man, only two cases in the cow are on record. Considering also that the udder is maintained at a functional level through a large share of the lifetime of a cow, and that it is subjected to frequent and often severe trauma, it is clear that neither the hereditary constitution nor the commonly postulated environmental factors predispose to mammary cancers in this species.

To present an example of studies in animals, reference may be made to their use as a test of the inheritance of resistance to infectious disease. It had been shown long ago by botanists that resistance and susceptibility to plant diseases are inherited. On the premise of a unity in fundamentals among all living organisms, it might have been predicted that resistance and susceptibility in man and other mammals also are inherited. Now we know that this is true, partly from direct observations on human families and partly from experiments on laboratory animals. Webster, working with mice under carefully controlled environmental conditions, was able to demonstrate that some strains are resistant to certain virus and bacterial infections, while other strains are susceptible. There was a differential among the infections; a strain resistant to one type of infection often proved susceptible to another. Crossings of the resistant and susceptible strains indicated that resistance is inherited as a Mendelian dominant.

CONCLUSION

This discussion is designed only to stress the indispensability of genetic principles in medical thinking. It makes no pretense at detail, since consideration of detail is impossible when the basic concepts must be covered in such brief form. The aim will have been accomplished if the following generalizations are appreciated. Factors of heredity determine conditions of health as well as some malformations, diseases and predispositions to disease. Such heredity is inflexible in certain traits, but for many traits the mechanisms of heredity are labile. Hereditarily prospective traits may be either sustained or altered by environmental influences, which are effective on the sperm and egg and on the individual from the very beginning of his existence as an embryo.

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APPRAISAL OF THE NUTRITIONAL STATUS OF CHIDREN*

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Whether we have war or peace, depression or prosperity, plague or freedom from pestilence, the subject of nutrition will always be of importance to the physician. It is the purpose of this presentation to review certain practical aspects of the nutritional problem which may aid the student of medicine as well as the practicing physician in understanding the overall problem of nutrition in children.

If we were completely susceptible to propaganda and allowed our thoughts and actions to acquiesce to the repetitious statements of the radio, the artistic advertising displays in the magazines and newspapers, and the remarks of the provocative politician and the social ideologist, we, as physicians, might find ourselves deprived of one of the most important phases of the practice of medicine, namely, nutrition. True enough, the field of nutrition is not exclusively ours, as it is indeed broad and many individuals and groups, such as the soil conservationist, farmer, rancher, breeder, manufacturer, transporter, distributor, baker, cook, and retailer are concerned with the overall problem of supplying nutrients for use by the body. Many others such as the chemist, physicist, biochemist, botanist, home economist, and dietitian have contributed greatly to our knowledge of nutrition. However, it is the physician who has the dual knowledge of fundamental nutrition and clinical medicine and thereby is capable of performing the important task of assessment of the nutritional state of the individual.

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This problem is especially important in the appraisal of the nutritional status of children and indeed at times is very difficult. The physician, as well as many others, has expended considerable effort to find a simple, easy method for the evaluation of the nutritional status of children, but to date none such has been devised. The time honored custom of relying largely or entirely upon clinical impressions expressed as "well nourished" and "poorly nourished" is a far cry from the real appraisal of intake and utilization by the body of the specific nutrients. On the other hand, application of the exact methods used in animal studies is obviously impossible, and results obtained therefrom cannot be applied directly to human subjects. The task remains a difficult one, but it cannot be shirked by the physician, as he is the only individual equipped with the necessary knowledge and experience to make this evaluation. This information is essential to him in the care of his patients in order that he may, first, diagnose deficiency disease and institute proper treatment, and second, maintain ideal or optimal nutrition by preventive measures for those under his care.

In the modern, enlightened household, actual deficiency disease is seldom encountered; however, the physician in his examination of children frequently finds evidence of malnutrition which cannot be explained on the basis of dietary lack. It is in such situations that the physician plays his particular role, for there are a number of conditions which may be the underlying cause of this malnutrition. The condition may be that of faulty absorption of nutrients, such as found in cystic fibrosis of the pancreas and other steatorrheas; it may involve disturbances in intermediary metabolism, such as in diabetes mellitus and other endocrine disturbances and in certain liver disorders; or it may be due even to the presence of infections, such as rheumatic fever, tuberculosis, syphilis, brucellosis, or nephritis. The possibility of the presence of these or other disorders must be carefully weighed in the physician's appraisal of the nutritional status of his patient.

Although the future may bring forth a satisfactory short-cut method, the best means at his disposal at the present for this evaluation are those employed in arriving at any other diagnosis: namely, (1) complete history; (2) careful physical examination; (3) employment of laboratory procedures; (4) knowledge of the nature of the disease, in this instance, the basic aspects of nutrition. The following outlines adapting these procedures to the specific problem of nutrition may be of some assistance to the student and physician.

FEATURES OF THE HISTORY TO BE CONSIDERED IN NUTRITIONAL EVALUATION

Age of patient: Most of the serious and more common nutritional deficiency states (rickets, tetany, scurvy, xeropthalmia) occur more frequently in the infant and young child than in the older child. Also, the manifestations of deficiency disease may vary with age. In vitamin A deficiency the hyperkeratosis which occurs in the older child seldom is seen in the infant, and keratomalacia is found more frequently in young infants than in older children. Symptoms of nicotinic acid deficiency are scarcely known in infants yet older children may suffer from typical pellagra. Infantile beriberi is entirely different from the thiamin deficiency picture seen in older children and adults.

Nature of the presenting complaints: The nature of the presenting complaint may provide clues which lead one to suspect nutritional deficiency. For example, the information that the baby is fussy and cries when touched, as in the changing of the diaper, and has a tendency to bleeding gums may suggest scurvy. A history of convulsions between the ages one to three years may suggest tetany. The symptoms of lassitude, lack of endurance, and disinterested attitude may lead one to suspect either protein or iron deficiency. There is some tendency to list individual symptoms such as insomnia, anorexia, weight loss, lacrimation, lassitude, and many others which are said to occur in various deficiency states. Inasmuch as these same symptoms are commonly found in many pathologic psychosomatic states to list these as evidence of deficiency disease tends to confuse the inexperienced and to mislead the ill informed person. The interpretation of the significance of various complaints is possible only in the light of a complete dietary history, physical findings, certain laboratory data, and therapeutic tests.

Family background: The constitutional heredity of the parents as to body type and pattern of weight gain may be of inestimable value in the interpretation of the child's height and weight measurements at any particular time. The psychologic and emotional reactions of other family members are important in the interpretation of nutritional problems in children.

Economic factor: It has been stated that of all factors which contribute to malnutrition, the socio-economic factor is the most important. Where poverty is found, malnutrition exists.

Dietary history: Careful analysis of the actual food consumption by the child gives valuable information regarding the likelihood of development of a deficiency disease. Every student of medicine, for example, knows that it is risky to make the diagnosis of scurvy or rickets without the dietary history of an insufficient intake of citrus fruit or vitamin D, respectively. Knowledge of the amount of and length of breast feeding likewise is significant as scurvy, xerophthalmia, and rickets are seldom seen in infants fed on human milk. In breast fed infants information on the adequacy of the maternal diet is also essential for complete evaluation. A detailed dietary history is especially important in children with allergic disorders, food idiosyncrasies, or such diseases as diabetes, nephritis, nephrosis, and celiac syndrome. In fact, dietary restrictions may have occurred with any disease, or during the recovery state following it. A very useful method*, approved by the Council on Food and Nutrition of the American Medical Association, has been devised by the Department of Nutrition of the National Live Stock and Meat Board for analyzing the food consumption of dietary

TABLE 1.
RECORD OF DAILY FOOD CONSUMPTION FOR EVALUATION OF THE DIETARY HISTORY OF THE CHILD

Type of food	Daily Consumption		Allowance for good nutrition for growing child
I. Milk and milk products	Total		1½ pts. (½ - 1 qt.) daily
	With meals	Between meals	
	With cereal	In cooking	
	Cheese	Cream	
	Others	....	
II. Eggs	Total	....	1 serving daily or 5 times per wk.
	With meals	In cooking	
III. Meats	Total	....	1 serving daily or 5 times per wk.
a. Lean (muscle)	Beef	Pork	
	Lamb	Others	
b. Poultry	Chicken	Others	
c. Fish	Salmon	Others	
d. Shell fish, etc.	Shrimp	Crab	
	Others	....	
c. Liver	....	....	Once per week.
IV. Vegetables			
a. Potatoes	Total	....	1 serving daily
	Irish	Sweet	
b. Leafy green	Total	....	1 serving daily

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*National Live Stock and Meat Board, 407 South Dearborn, Chicago, Illinois. Nutrition Yardstick: A graphic calculator for measuring the food value and adequacy of daily diets.

Type of food	Daily Consumption		Allowance for good nutrition for growing child
	Lettuce	Chard	
	Broccoli	Brussel sprouts	
	Cabbage	Others	
c. Others	Total		1 serving daily
	Beans	Peas ... Corn	
	Asparagus	Beets	
	Carrots	Cauliflower	
	Parsnips	Squash ... Turnips	
V. Fruits			
a. Citrus and tomato	Total		1 serving daily
	Orange	Lemon	
	Grapefruit	Tomato	
b. Others	Total		1 serving daily
	Peaches	Apricots	
	Pears	Apples	
	Figs	Pineapple	
	Plums	Berries	
	Bananas	Prunes	
	Others		
VI. Breadstuffs and cereals	Total		1 slice bread or equivalent in cereal with each meal
a. Bread	Total		
	Whole Wheat	Enriched	
	Others		
b. Cereals	Total		
	Cooked		
	Whole grain	Enriched	
	Macaroni	Spaghetti	
	Soybean		
	Others		
	Prepared		
	Whole grain	Enriched	
	Others		
VII. Fats	Total		2 tablespoons daily
a. Butter or fats with vit. A	Total		
	As spread	In cooking	
b. Animal fats and certain vegetable oils as a source of essential fatty acids	Total		
	Lard	Meat Fats	
	Corn oil	Soybean oil	
	Others		
VIII. Vitamin D Dietary supplements	Total		Equivalent in vitamin D content to teaspoon of cod liver oil
	Cod Liver oil	Concentrate	
	Percomorphum oil	Viosterol	
	Irradiated milk		
IX. Iodized salt	Total		Trace—(if in goiter belt)
X. Desserts	Total		As need for calories
Sugar and syrup	Sugar	Syrup	
	Jams	Jellies	
	Cake	Cookies	
	Ice Cream	Pudding	
	Custards	Jello	

essentials in terms of the ordinary food servings.

The following outline (table 1) may be employed to good advantage in obtaining the dietary history of the child.

After a complete dietary history has been obtained the student often is at a loss, other than for citrus fruits, vitamin D and iodine, to know how to interpret the findings in relation to the occurrence of deficiency disease. To facilitate the interpretation of the dietary history we have presented schematically in table 2 the specific deficiency states which may be suspected if dietary analysis discloses an insufficiency in any or several of the specific food categories. Study of the chart will also show the food classes which supplement each other in providing the various food essentials.

TABLE 2.

DEFICIENCY DISEASES WHICH MAY BE SUSPECTED WHEN DIETARY HISTORY REVEALS AN INSUFFICIENT INTAKE OF FOOD IN THE VARIOUS CLASSES

	I MILK	II EGGS	III MEAT	IV VEG. LEAFY	V FRUITS CITRUS	VI CEREALS WHOLE	VII FATS		VIII VIT. D	IX IODINE	X DESSERTS
							VIT. A	ESS. F.A.			
Edema	xx	x	xxx			x					
Anemia		x	xx	x		x					
Rickets Tetany Osteoporosis Caries ?	xxx			x					xxx		
Xerophthalmia Nyctalopia Phrynoderma	xx	x		x	x		x				
Scurvy				xx	xxx						
Beriberi			xx	x		x					
Pellagra	x		xx			x					
Ariboflavinosis	xx		x	x		x					
Dermatoses								?x			
Goiter										xxx	
Underweight	x		x			x					xx

THE PHYSICAL EXAMINATION IN NUTRITIONAL EVALUATION

Examination of the child with the knowledge of the complete dietary history at hand aids greatly both in the detection of distinct deficiency disease and in the consideration of findings which may or may not be due to specific lack of food substances. This, of course, is not possible if the examiner is not familiar with the manifestations of the various deficiency diseases. Oftentimes, however, the interpretation of such findings as lacrimation, photophobia, and burning of the eyes; sores at angle of mouth; skin eruptions; bleeding gums; glossitis; weakness or prostration; edema; paralysis; convulsions; aphonia; pallor; underweight, and others may be difficult without the support of the history and the knowledge of response to specific therapeutic measures. Conversely, if the physician finds evidence of deficiency states in spite of an apparently adequate dietary history then he must leave no stones unturned to determine the cause; for example, certain disease conditions or deranged metabolic states. In general, of distinct value to the physician is the clinical impression he gains regarding the patient's appearance, color, muscle tone, tissue turgor, mental alertness, and physical activity, all of which give him valuable information. This impression must be interpreted in the light of other data, but by and large, it is safe to say that a child radiating health and vigor rarely has a deficiency disease.

Height and weight indices have fallen somewhat into disrepute as a guide to nutrition, but those giving the normal range are still of value. The Grid Method* for evaluating physical fitness as devised by Wetzel has been found by some to give valuable information. The child making a satisfactory gain in weight seldom is suffering from a deficiency disease.

LABORATORY DATA USEFUL IN EVALUATION OF NUTRITIONAL STATUS

In table 3 are listed laboratory procedures which are of assistance in the evaluation of the nutritional status. In children the biomicroscopy or slit lamp studies are not too satisfactory as it is difficult to obtain the necessary cooperation especially from the small child.

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*Prepared by NEA Service, Inc., 1200 W. 3rd St., Cleveland, Ohio.

TABLE 3.
SUMMARY OF LABORATORY PROCEDURES WHICH MAY BE USED IN THE DIAGNOSIS OF VARIOUS DIETARY DEFICIENCY DISORDERS

CONDITION	X-RAY	BLOOD	URINE	BIOMICROSCOPY	OTHER
Rickets	Long bones				
Tetany		Serum Ca, P, phosphatase			
Osteoporosis	Skeleton				
Edema		Plasma protein	Creatinine output		
Scurvy	Long bones	Ascorbic acid Saturation test	Excretion, saturation	Gums	Tourniquet test
Xerophthalmia					Corneal smear Dark adaptation test
Keratomalacia		Vitamin A		Conjunctiva	
Nyctalopia					
Phrynoderma		Carotene			Skin biopsy
Anemia		Hb, Rbc, hematocrit			Bone Marrow
Beriberi	G-I tract Heart	Pyruvic acid thiamine	(Pyrimidine) Excretion		EKG
Pellagra			Saturation	Tongue	
Ariboflavinosis				Cornea	
Hemorrhagic disease		Prothrombin time			
Certain dermatoses		Iodine number of serum fatty acids			

OUTLINE OF BASIC FACTORS IN NUTRITION

As an aid for evaluating whether the findings obtained from the history and examination are indicative of adequate nutrition, the approximate daily requirements for basic factors are summarized in tables 4, 5 and 6.

I. *Water:* Next to oxygen, water is the most important substance needed by the body to maintain normal metabolic functions. The infant's need for water is approximately three times that of the adult subject in relation to body weight. The approximate water requirements for various ages are presented in table 4.

TABLE 4.
APPROXIMATE DAILY REQUIREMENTS OF CHILDREN FOR CALORIES, PROTEIN AND WATER

Age yr.	Calories per kg.		Protein gm./kg.	Water c.c./kg.
Infancy	110	(120 - 100)	4.0	150
1 - 3	100	(100 - 90)	3.5	125
4 - 6	90	(90 - 80)	3.0	100
7 - 9	80	(80 - 70)	2.5	75
10 - 12	70	(70 - 60)	2.0	75
13 - 15	60	(60 - 50)	1.5	50
15+	50	(50 - 40)	1.0	50
Adult	40	(40 - 30)	1.0	50

II. *Calories:* In relation to body weight the energy needs of infants are about three times that of adults. The approximate caloric requirements for the various ages are given in table 4. In the average diet about 50 per cent of the calories are supplied by carbohydrates, 35 per cent by fat, and 15 per cent by proteins. The greatest variation in expenditure of calories occurs in regard to growth and activity, the basal requirements are proportionally the greatest and are quantitatively more in infants than older subjects, while those necessary for specific dynamic action are small but quite constant and the unused portion in the stool usually does not amount to more than 10 per cent of that consumed. In the consideration of caloric requirements in practice, the measurement of success in meeting the caloric needs of the individual is based upon such clinical data as growth, general well being of the child, and satiety.

III. *Proteins:* Proteins are the predominant solid constituent of the body and in the diet are the only source of the essential amino acids. The ten amino acids, threonine, valine, leucine, isoleucine, lysine, histidine, trypophane, phenylalanine, methionine, and arginine which have been found to be indispensable for growth and development of experimental animals in recent years, have been found to be the ones essential for human nutrition, with the exception of histidine. Although the biologic value of animal protein is greater than that of vegetable proteins, it is known that mixtures of these proteins as they are consumed in the usual diet supply the required amino acids. The protein needs of the infant, just as for water and calories are approximately three times greater in relation to body weight than those for adults. The approximate requirements for the various ages are presented in table 4.

IV. *Carbohydrates:* The greatest percentage of the calories and necessary bulk of the diet are supplied by carbohydrate, yet probably less than one per cent of the body weight constitutes stored carbohydrate—chiefly as glycogen. Carbohydrate calories are a readily available source of energy and sufficient quantities should be supplied in the diet to prevent the ketosis which results when excess fat is burned to supply the caloric needs. If the calories supplied by proteins constitute 30 per cent or more of the calories used, ketone bodies do not accumulate in the blood or tissues even though no carbohydrate is included in the diet. The relative quantity necessary in the diet of children is the same as for adults.

V. *Fats:* The chief dietary function of fat is to supply fatty acids in the form of triglycerides as a source of concentrated energy. The nutritional significance of the lipids or fat-like substances, however, are not entirely understood. No one has demonstrated the dietary necessity of the compound lipids, phospholipids (lecithin, cephalin, or sphingomyelin) or glysolipids (cerebrosides). Of the derived lipids, cholesterol is the most abundant of the animal sterols yet its synthesis occurs in the body. However, the body does have special need for certain sterols when irradiated as a source of vitamin D. Choline, derived from the phospholipids, is considered as one of the components of the vitamin B complex. Of special interest from the viewpoint of nutrition are the so-called essential fatty acids, the most important of which are the highly unsaturated fatty acids, linoleic acid (18 carbon atoms with 2 double bonds) and arachidonic acid (20 carbon atoms with 4 double bonds).

Essential Fatty Acids: Burr and Burr[1] in 1929 found that young rats reared on diets extremely low in fat developed a syndrome characterized by retarded growth, scaliness of the skin and tail, impaired reproductive capacity, kidney lesions with hematuria and early death. Administration of small amounts (20 to 100 mg.) of linoleic acid or arachidonic acid effected a complete cure in these animals. Hansen and Wiese[2] found that when puppies were fed diets practically devoid of fat (0.13 per cent), the skin and hair showed abnormalities without any evidences of disturbance in growth or kidney damage. When these animals were about three months of age the hair became dry and coarse and the skin was dry and exhibited extensive flaky desquamation. Litter mate animals which received fresh lard substituted isocalorically for sucrose calories had normal skin and hair. Blood lipid studies revealed that both rats and dogs, although they synthesized sufficient fat to maintain normal levels in the blood, did not synthesize fat with a high degree of unsaturation.

Relatively little is known of the human need for these highly unsaturated fatty acids. On several occasions human subjects have been kept on diets very low in fat without any distinct clinical syndrome developing. Blood lipid studies, however, indicate that the human organism is not able to synthesize highly unsaturated fatty acids. Even though a specific human need for these as yet has not been proved fully, there is some indirect evidence that linoleic and arachidonic acids may play a role in human nutrition. The probable function of these acids is in reference to the condition of the skin. The author has observed that certain infants with eczema appear to be benefited clinically when fats such as fresh lard and vegetable oils (corn oil and linseed) are added to the diet. Although not all patients with eczema respond favorably, in the experience of the author and of Finnerud and co-workers[3] it appears that more than one-half of the patients with intractable eczema are materially benefited by the dietary inclusion of such fat. These fats (fresh lard and certain vegetable oils which contain the essential fatty acids) are effective in curing and preventing the fat deficiency syndrome in experimental animals. The clinical evidence with patients with eczema is further substantiated by blood lipid studies. It has been found that the serum fatty acids of the greater majority of infants with eczema and over one-half of the adult subjects with chronic eczema have iodine numbers which are below the normal range. Coincident with the amelioration of the skin manifestations in those patients given dietary fat rich in the unsaturated fatty acids the iodine numbers of the serum fatty acids in many patients return to normal levels. Much is yet to be learned concerning the metabolism of the unsaturated fatty acids. Our understanding of the problem in regard to human beings will be enhanced no doubt when satisfactory methods are devised for the determination of linoleic acid and arachidonic acid in the blood and tissues. Interrelationships have been found to exist between the essential fatty acids and certain vitamins such as pyridoxine, pantothenic acid, inositol and possibly vitamin A metabolism. Based on studies with experimental animals Burr has suggested that the diet should contain about one per cent of fat rich in the essential fatty acids.

VI. *Minerals:* Minerals is the term more or less loosely applied to all elements which are normally essential to structure and function of the body other than those which occur largely as organic components of tissue (carbon, nitrogen, hydrogen, and oxygen). The minerals occur largely as ash when a food or body tissue is burned. Inasmuch as minerals play important structural and functional roles, there exists a special need for them during the period of growth. Marriott has estimated that for each gram of protein laid down in the body 0.3 gm. of minerals also is deposited.

Electropositive elements:

Calcium: Essential for structure in bones and teeth, also important in metabolism of muscle nerves and coagulation. Usually an intake of 50 to 70 mg. per kilogram per day in children will provide a retention of 10 to 20 mg. per kilogram per day which amount appears to be an optimal quantity. The chief source is milk and milk products. In table 5 the approximate daily requirement for the child is presented.

TABLE 5.

APPROXIMATE DAILY REQUIREMENTS OF CHILDREN FOR MINERALS*

Age	Ca	P	Fe	I_2
yr.	gm.	gm.	mg.	
Infancy	1.0	1.5	6	Trace
1 - 3	"	"	8	"
4 - 6	"	"	10	"
7 - 9	"	"	12	"
10 - 12	"+	"+	14	"
13 - 15	"+	"+	16	"
15+	"+	"+	16	"

*Tables 5 and 6 adapted from recommendations by the Food and Nutrition Board of the National Research Council. Slight variations made in order to state the amounts necessary for each three-year period after infancy in direct arithmetic progression.

Magnesium: Knowledge of specific function is meager but about three-fourths of that in the body is in the skeleton. The body needs are automatically met because of rich vegetable and animal sources.

Potassium: Most important electropositive intracellular ion. Deficiency may develop in severe diarrhea. Requirement of 1 to 2 gm. daily is supplied readily in the ordinary diet of children.

Sodium: Plays an important role in extracellular fluid regulation. Requirement of 1 to 2 gm. daily for the child is easily supplied in food and as table salt. Deficiency may develop in excess sweating.

Electronegative elements:

Phosphorus: Widely distributed in the body as inorganic phosphate, especially in bone and as organic compounds. It is an important intracellular constituent of the body. The actual requirement and retention of the child is somewhat less than for calcium. However, because of its abundance in the diet, greater quantities than are required are usually consumed. The average daily requirement for various ages is presented in table 5.

Chlorine: Occurs chiefly as chlorides

and is the most abundant electronegative electrolyte in extracellular fluid and is important in maintenance of acid-base balance and osmotic equilibrium. Under ordinary conditions the child's requirements are met without difficulty. In the pathologic conditions of dehydration, acidosis, and adrenal cortical hormone deficiency—chloride metabolism disturbances occur.

Sulfur: Distribution in the body is determined chiefly by the distribution of protein which in turn is found in many different tissues. Diets which supply sufficient amino acid meet the requirement for sulfur in children.

Elements present in important organic complexes such as hemoglobin and thyroxin:

Iron: Important in tissue and blood hemoglobin formation also in cytochrome, hence is necessary for growth. The requirement probably varies from 0.4 to 1.0 mg. per kilogram per day in early life to 0.2 to 0.4 mg. for the older child. The recommended daily requirement for children is presented in table 5.

Iodine: Essential in the manufacture of thyroxin. It is widely distributed in the earth's surface yet lack of iodine in the soil or water causes goiter in many localities. The difference in iodine intake between individuals living in the goitrous and non-goitrous belts is about 14 micrograms per day. If the diet supplies 40 to 100 micrograms per day (usually expressed as a trace) there is no need to add supplements such as iodized salt (0.01 per cent potassium iodide) to the diet.

Trace elements:

Fluorine: Important in bone and tooth structure. Water containing 0.7 parts per million appears to have sufficient fluorine to prevent dental caries and a small enough quantity to prevent mottling of the teeth (fluorosis).

Copper, zinc, manganese, cobalt, silicon, and selenium: Probably of importance in human nutrition but exact roles and requirements not yet determined.

Boron, nickel, aluminum, bromine, and arsenic: Elements present in minute traces in the body but significance in neither human nor animal nutrition has been worked out.

VII. *Vitamins:* These may be termed the glamour factors in nutrition. Nevertheless, in spite of all their popularity they are important and are essential for the maintenance of proper body functioning.

VITAMINS PROVED TO BE ESSENTIAL FOR INFANTS AND CHILDREN

Sterols with vitamin D activity: The diets of infants and children are more apt to be deficient in substances having vitamin D activity than any other food essential. There are some 10 sterols which have been found to possess vitamin D activity, the most important of which are activated ergosterol (vitamin D_2) from vegetable sources and irradiated 7-dehydrocholesterol (vitamin D_3) from animal source. Ultraviolet radiation supplements the vitamin D in the diet. The average daily requirements for children are given in table 6.

TABLE 6.

APPROXIMATE DAILY REQUIREMENTS OF CHILDREN FOR VITAMINS*

Age yr.	A I.U.	Thiamin mg.	Riboflavin mg.	Niacin mg.	Ascorbic Acid mg.	D I.U.
Infancy	2000	0.4	0.6	4	30	400 - 800
1 - 3	2500	0.6	0.9	6	40	"
4 - 6	3000	0.8	1.2	8	50	"
7 - 9	3500	1.0	1.5	10	60	"
10 - 12	4000	1.2	1.8	12	70	"
13 - 15	4500	1.4	2.0	14	80	"
15+	5000	1.6	2.2	16	90	"

*Tables 5 and 6 adapted from recommendations by the Food and Nutrition Board of the National Research Council. Slight variations made in order to state the amounts necessary for each three-year period after infancy in direct arithmetic progression.

Ascorbic acid: This substance is apt to be lacking in the diet of many artificially fed infants. Ascorbic acid is necessary for the structure of intercellular cement ground substance and is concerned with cellular respiration. The recommended daily requirements for various ages are presented in table 6.

Vitamin A and carotinoid pigments: Of the various dietary deficiencies which may develop in children those due to the lack of vitamin A or its precursors (most important is beta carotene) may have the most serious results—namely, blindness. The daily requirement for infants is relatively greater than for adult subjects. The recommended daily allowance for the various ages is given in table 6.

Vitamin K: Quinoid structures, vitamin K_1 ($C_{31}H_{46}O_2$) from alfalfa and vitamin K_2 ($C_{41}H_{56}O_2$) from putrified fish meal appear to be essential for normal prothrombin formation, and these are necessary for proper blood coagulation. The synthesized compound 2-methyl-1, 4-naphthoquinone with the non-proprietary name of menadione appears to have the greatest antihemorrhagic activity. Vitamin K is abundantly supplied in the normal diet but a special need exists for the newborn. This vitamin apparently is synthesized in the normal gastrointestinal tract by bacterial action; however, deficiency may develop when fat absorption is lacking (absence of bile, steatorrhea) and in liver disease.

Components of the vitamin B complex—niacin, riboflavin and thiamin: Components of the vitamin B complex are apt to be found in the same food substances, therefore, individuals suffering from deficiency of one component, for example, pellagra, ariboflavinosis, or beriberi are apt to have deficiency of one or both of the others. Each of these factors has been synthesized and each supplies a prosthetic group to form one or more coenzymes which function in an enzyme system concerned with cellular respiration. The suggested daily requirements for children are given in table 6.

Vitamins which may be of importance in the nutrition of infants and children are:

Other components of the vitamin B complex—pyridoxine, pantothenic acid, biotin, choline, inositol, and para-aminobenzoic acid. These substances are known to be of significance nutritionally from work with experimental animals. Although there is some evidence to indicate that they may be of importance in human nutrition, the specific needs for infants and children are not known, hence, the daily requirements are not known.

Vitamin E: Alpha tocopherol is the most important of some forty substances which possess vitamin E activity. In spite of many studies the actual human need is no more than conjectured.

Vitamins not clearly defined even from studies with experimental animals are:

Factors of the vitamin B complex—vitamin B_3 (pigeons), vitamin B_4 (rats and chicks), vitamin B_5 (pigeons), factor U, R, and S (chicks), cartilage growth factor (chicks), folic acid or nucleotide (chicks, Lactobacillus casei) and kidney residue (chicks).

Miscellaneous vitamins: Citrin or vitamin P containing two components, hesperdin and eriodictin is said to be concerned with capillary resistance. Grass juice factor is concerned with growth in guinea pigs; "milk factor" with stomach hemorrhages and ulcers in guinea pigs; vitamin L, a factor for lactation in rats; and vitamin M, prevents anemia, leukopenia, and weight loss in monkeys.

VIII. *Miscellaneous factors in nutrition:* For complete fulfillment of the nutritional needs of children the following dietary factors must be considered: (1) Roughage; (2) digestibility; (3) satiety; (4) proper food preparation for cleanliness, appetite appeal, and palatibility; (5) availability — economic and geographic; (6) pigments, antioxidents and enzymes—human dietary significance not known; (7) possible synthesis of vitamins in gastrointestinal tract; (8) psychologic factors—one of the most common problems in modern practice of medicine in children mostly because of parental over-anxiety.

SUMMARY AND CONCLUSIONS

The physician may become frustrated at times by the maze resulting from the mass of new discoveries, temporary overemphasis on individual dietary factors, vague terminology such as "submarginal," "subclinical," "combined deficiency," "twilight zone," and "hidden hunger" states, and from the sweeping "educational" program attempted by some of the commercial advertisers. From a practical viewpoint, the daily requirement of the growing child and the daily diet which will satisfy these requirements may be stated very simply. The following recommendations are adapted from those of the Food and Nutrition Board of the National Research Council:

Protein	2 gm. per kg. body weight
Fat) Carbohydrate)	Sufficient to meet caloric needs
Minerals	
Calcium	1.0 gm.
Phosphorus	1.5 gm.
Iron	16.0 mg.
Iodine	Trace
Vitamins	
A	5000 I.U.
Thiamin	1 mg.
Riboflavin	2 mg.
Nicotinic acid	10 mg.
Ascorbic acid	60 mg.
D	400-800 I.U.

Composition of a diet which satisfies the basic nutritional needs of the growing child:

Milk	3/4 to 1 quart daily
Meat (fresh, lean), or fish	1 serving daily or 5-6 per wk.
Eggs	1 daily or 5-6 per wk.
Vegetables (1 raw, 1 pigmented)	2 or more servings daily
Fruits (1 fresh)	2 or more servings daily
Butter	2 tsp. or more daily
Liver	1 serving or more per wk.
Bread and cereals (whole grain)	Sufficient to meet caloric need
Cod Liver oils	1 tsp. or equivalent daily
Salt (iodized)	for seasoning

In conclusion, one of the valuable aids to the physician in the appraisal of a child's state of nutrition is the response noted to the correction of a defective dietary regimen or to the administration of specific food factors, such as amino acids, fat, certain minerals or vitamins. In the interpretation of these so-called therapeutic tests in the diagnosis of nutritional deficiency in some instances clinical changes may be detected within a few days, e. g., in the deficiencies due to vitamin K, ascorbic acid, vitamin D, nicotinic acid, riboflavin, thiamin, vitamin A (nyctalopia). In other instances changes may require weeks to months to me discernible, for example, in the nutritional disorders resulting from the lack of vitamin D, protein, iodine, iron, vitamin A, and in still others many months may pass before results or restitution of the condition to normal can be expected, for example, in the xerosis and skin eruptions due to lack of vitamin A, and in the dermatoses which may be associated with disturbances in unsaturated fatty acid metabolism.

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RHEUMATIC HEART DISEASE*

A STUDY OF 167 CASES AMONG 12,317 AUTOPSIES PERFORMED AT THE CHARITY HOSPITAL IN NEW ORLEANS DURING TEN YEARS

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Because of apparent or real differences in symptomatology, course, and prognosis of rheumatic heart disease as it occurs in different parts of the world,[1-11] it is important to review features which characterize this disease in various geographical areas. The present study is concerned with a partial analysis of cases with rheumatic heart disease encountered among routine autopsies performed at Charity Hospital in New Orleans during the past ten years.

METHOD OF INVESTIGATION

Twelve thousand three hundred and seventeen autopsy records in the period from January 1, 1935 to January 1, 1945, were reviewed in search of proved cases of rheumatic heart disease. Such a statistical survey should yield more accurate knowledge of incidence than clinical diagnoses, since the latter are not always subject to accurate demonstration or objective evaluation; it has been suggested[12] that the supposed rarity of rheumatic infection in the southern United States may be due in part to failure of recognition. Validity of autopsy statistics is enhanced by the fact that in a chronic disease such as rheumatic fever, the majority of patients afflicted probably die in hospitals. Hedley[13] noted that 94.3 per cent of 1,020 deaths from rheumatic heart disease in Philadelphia occurred in hospitals.

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*Condensation of thesis presented to Department of Pediatrics, Tulane University School of Medicine, May 1945.

For the purpose of this study, only cases with a definite pathologic diagnosis of rheumatic heart disease were accepted. None were included in which clinical diagnoses of rheumatic heart disease could not be confirmed pathologically, in which only "suspicious" or "atypical" lesions were noted, or in which the pathologist was unwilling to make a definite commitment as to presence of typical rheumatic lesions.

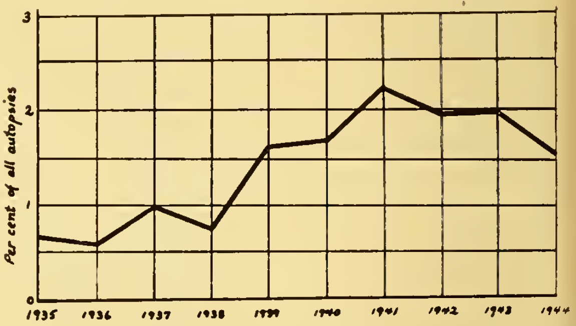
Although mitral stenosis has been considered to be almost always rheumatic in origin,[14, 15] its presence at autopsy was not considered adequate for inclusion in this study unless it was accompanied by a rheumatic history and the pathologist's statement of a typical rheumatic character. Data for 1944 are yet incomplete and may be subject to criticism or revision. Figures in this study are considered conservative, since only anatomically proved cases were included.

INCIDENCE

Chart I represents the number of cases by years recorded in routine autopsies. During this ten year period, rheumatic heart disease was diagnosed anatomically in 1.35 per cent of all autopsies. Of particular interest is the increase of rheumatic lesions at autopsy since 1939 and the persistently higher incidence since then. It is noteworthy that these figures are considerably greater than those often quoted for the South in general. This may be either due to actual increasing incidence, as hinted by Bailey,[1] or may merely be in confirmation of the aphorism "Was man weiss, sieht man." Discussion of this point is not the purpose of this paper, however. In Charity Hospital at New Orleans, as in many other Southern hospitals, it seems obvious that rheumatic fever is being diagnosed clinically more frequently now than it was eight or ten years ago. Houston[8] reported 88 rheumatic cases among 115,213 admissions to the Charity Hospital at New Orleans for the period 1922-1927 (0.076 per cent), whereas Bruno and Engelhardt[2] reported 875 rheumatic cases among 187,987 admissions for the period 1939-1941 (0.46 per cent); the latter incidence is six times greater than that of the earlier report.

CHART I

Percentage distribution by years of 167 cases of rheumatic heart disease among routine autopsies at the Charity Hospital in New Orleans from January 1, 1935 to January 1, 1945.



Incidence of Rheumatic Heart
Disease Among Routine Autopsies

Year	Number Autopsies	Rheumatic Cases	Per cent Rheumatic
1944	890	14	1.57
1943	1001	20	1.98
1942	872	17	1.94
1941	1241	29	2.23
1940	1367	23	1.68
1939	1486	24	1.61
1938	1320	10	.75
1937	1246	12	.96
1936	1547	9	.58
1935	1347	9	.66
Total	12,317	167	

The question as to whether these rheumatic subjects were natives of the South or whether they had migrated from the North in an effort to find environment supposedly more congenial to their disease cannot be answered. Among the 167 cases analyzed, the place of birth was stated in 27; no single instance was noted in which the patient had migrated from the Northern states. All were natives of Louisiana with the exception of one, who was from Florida. Data regarding racial background are incomplete.

Several criteria have been used by investigators for expressing incidence. Most frequently quoted are morbidity figures based on clinical diagnoses alone; when observations at autopsy have been tabulated, many lesions only suggestively rheumatic have often been included.

The unusually high incidence of 9.1 per cent among 5,215 autopsies reviewed at the Boston City Hospital by Davis and Weiss[16] resulted from consideration of clinical and morphologic data together. This was appreciably higher than any previous or later figures encountered. Figures from our present study are in fairly close agreement with those reported by Longcope.[17] He found rheumatic cardiac lesions in 1.66 per cent of 8,164 autopsies at Johns Hopkins Hospital in the period from 1908 to 1929 and concluded that the disease was as common in hospitals in Baltimore as in those of Boston.

In the past five years, rheumatic heart disease has been diagnosed anatomically 103 times among 5,371 routine autopsies at Charity Hospital in New Orleans, an incidence of 1.91 per cent. In view of the rigid criteria used to obtain this figure, the New Orleans area does not appear to have as low an incidence rate as is commonly supposed.

RACE, SEX AND AGE

Many figures[2, 17-20] have been quoted on incidence of rheumatic fever by race and sex. In this series there were 83 cases among whites and 84 among colored patients (table 1); 56.3 per cent were male and 43.7 per cent female. These figures are in contrast to the general concept that rheumatic fever is more common in females. Another notable observation was the earlier age at death among females, being 29.2 years as opposed to average age of 36.4 years in males (table 2, chart 2). Fifty-seven and a half per cent of female rheumatics died by 30 years of age, whereas for males the cumulative death by 30 years of age was 40.4 per cent.

TABLE 1

INCIDENCE BY RACE AND SEX OF 167 CASES OF RHEUMATIC HEART DISEASE AMONG ROUTINE AUTOPSIES AT THE CHARITY HOSPITAL IN NEW ORLEANS FROM JANUARY 1, 1935 TO JANUARY 1, 1945.

White		Colored	
Female	32	Female	41
Male	51	Male	43
	83		84

TABLE 2

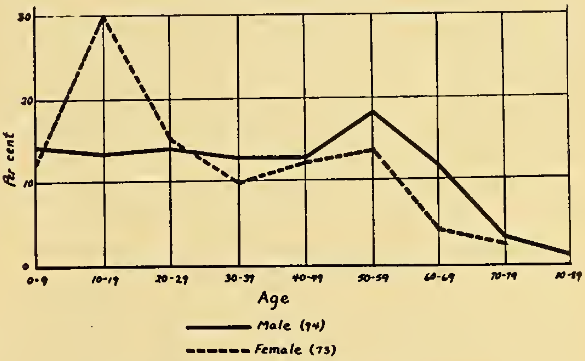
MEAN AGE AT DEATH BY RACE AND SEX OF 167 CASES OF RHEUMATIC HEART DISEASE AMONG ROUTINE AUTOPSIES AT THE CHARITY HOSPITAL IN NEW ORLEANS FROM JANUARY 1, 1935 TO JANUARY 1, 1945.

White		Colored	
Male	40.43 yrs.	Male	31.72 yrs.
Female	33.37 yrs.	Female	26.06 yrs.

White	37.69 yrs.
Colored	28.96 yrs.
White & Colored	33.30 yrs.
Male (W & C)	36.45 yrs.
Female (W & C)	29.26 yrs.

CHART II

Comparative percentage distribution by age decades of 94 cases of male with 73 cases of female patients having rheumatic heart disease among autopsies at the Charity Hospital in New Orleans from January 1, 1935 to January 1, 1945.



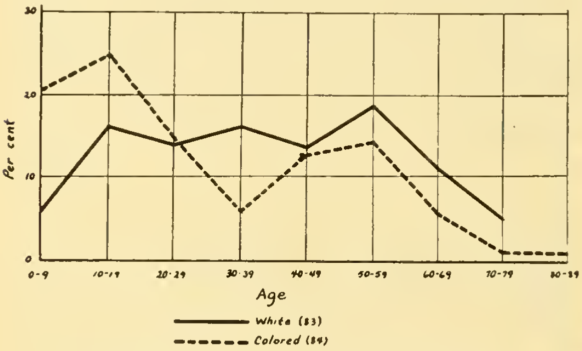
Comparative Deaths by Age Decades in Male and Female

	Male		Female	
Age	Deaths	Per cent	Deaths	Per cent
0-9	13	13.83	9	12.32
10-19	12	12.77	22	30.13
20-29	13	13.83	11	15.06
30-39	12	12.77	7	9.58
40-49	12	12.77	9	12.32
50-59	17	18.08	10	13.68
60-69	11	11.70	3	4.18
70-79	3	3.19	2	2.73
80-89	1	1.06	0	
	94		73	

The age at death confirmed the general opinion that rheumatic fever runs a shorter and more severe course in the colored race (chart 3), the mean age at death for the colored being 28.9 years in contrast to 37.6 years for the whites (table 2). Fifty-nine and a half per cent of deaths among colored rheumatics occurred in the first three decades, and 36 per cent of deaths were noted among the whites. A secondary rise in mortality figures among negroes was seen in the age group from 50-59 years, whereas among whites the age at death was fairly distributed for the first half century, with the maximum number of fatalities in the period from 50-59 years (chart 3). The peak age at death for negroes was in the second decade and among whites in the sixth decade, with the second decade a close second. Hedley[21] obtained the highest mortality incidence among negroes in the second decade, and found a gradual rise among whites to a peak in the age group from 40-49 years. These figures further support the belief that this disease is more malignant in the colored race.

CHART III

Comparative percentage distribution by age decades of 83 cases of white and 84 cases of colored patients having rheumatic heart disease among routine autopsies at the Charity Hospital in New Orleans from January 1, 1935 to January 1, 1945.



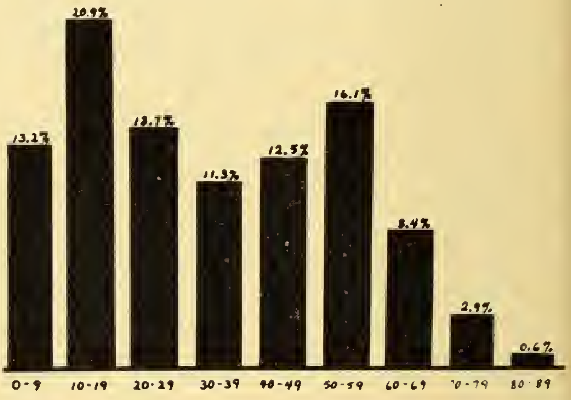
Comparative Deaths by Age Decades in White and Colored

	White		Colored	
Age	Deaths	Per cent	Deaths	Per cent
0-9	5	6.03	17	20.24
10-19	14	16.87	21	25.00
20-29	11	13.25	12	14.29
30-39	14	16.87	5	5.95
40-49	11	13.25	10	11.91
50-59	15	18.07	12	14.28
60-69	9	10.84	5	5.95
70-79	4	4.82	1	1.19
80-89	0		1	1.19
	83		84	

Considering all cases, the mean age at death was 33.3 years (table 2), a slightly higher figure than that of 28.9 years reported by Hedley[13] in Philadelphia and of 28.2 years by Coombs[22] in Great Britain. DeGraff and Lingg,[23] however, reported that the mean age at death of 644 patients at Bellevue Hospital was 33 years; Willus[24] gave 32 years as the mean age of 160 patients who died of rheumatic heart disease at The Mayo Clinic.

CHART IV

Percentage distribution by age decades of 167 cases of rheumatic heart disease among routine autopsies at the Charity Hospital in New Orleans from January 1, 1935 to January 1, 1945.



Deaths by Age Decades

Age	Deaths	Per cent
0-9	22	13.19
10-19	35	20.96
20-29	23	13.78
30-39	19	11.38
40-49	21	12.58
50-59	27	16.15
60-69	14	8.39
70-79	5	2.98
80-89	1	.59
	167	

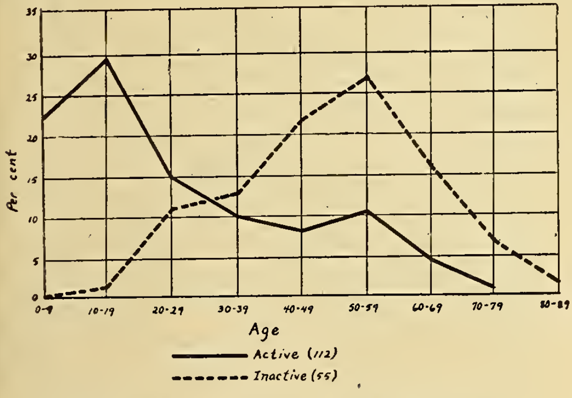
Cardiac deaths under 40 years of age have almost invariably been considered rheumatic.[9] The greatest number of deaths (20.9 per cent of the total deaths) occurred during the second decade (chart 4). Over 10 per cent of the deaths had occurred by ten years, over 30 per cent by 20 years, nearly 50 per cent by 30 years, and almost 60 per cent by the fortieth year of age.

PATHOLOGIC FINDINGS

These 167 cases of rheumatic heart disease were considered as "active" or "inactive," according to the type of lesion observed at autopsy. For the active group, criteria were the presence of Aschoff nodules, small bead-like vegetations on valve leaflets, acute fibrinous pericarditis, or a swollen and edematous mitral valve associated with one of the other active rheumatic lesions mentioned. Classification as "inactive" was based upon mitral stenosis, thick mitral valve and shortened chordae tendenae, chronic adhesive pericarditis, or myocardial fibrosis associated with one of the other inactive rheumatic lesions. Weight of the heart was not considered in differentiating from inactive cases.

CHART V

Comparative percentage distribution by age decades at time of death of 112 cases of active and 55 cases of inactive rheumatic heart disease among routine autopsies at the Charity Hospital in New Orleans from January 1, 1935 to January 1, 1945.



Comparative Deaths by Age Decades in Active and Inactive Cases

	Active		Inactive	
Age	Deaths	Per cent	Deaths	Per cent
0-9	23	20.53	0	0
10-19	33	29.47	1	1.82
20-29	17	15.19	6	10.91
30-39	12	10.71	7	12.73
40-49	9	8.03	12	21.82
50-59	12	10.71	15	27.27
60-69	5	4.47	9	16.36
70-79	1	.89	4	7.27
80-89	0		1	1.82
	112		55	

Signs of rheumatic activity have been noted in a large proportion of hearts of individuals as old as 40 years who died of rheumatic heart disease,[25] and it has also been stated[26] that signs of active myocarditis are present in fully 80 per cent of fatal cases. Sixty-seven per cent of these 167 cases showed active manifestations while the remaining 33 per cent showed only inactive lesions (chart 5). In 107 cases, death was attributable directly to rheumatic heart disease (table 3).

Age at death of active and inactive cases varied greatly, the mean age for the active group being 23.6 years and for the inactive 52.2 years. Peak age at death among active cases was in the second decade, and of the inactive cases in the sixth decade (chart 5). By age 30, 65 per cent of deaths had occurred in the active group, whereas there were only 12.7 per cent in the inactive group. The age at death in relation to first manifestation of rheumatic fever or rheumatic heart disease cannot be stated from the data available.

Rheumatic lesions were noted as merely incidental in 39, or 24 per cent of the cases (table 3). No clinical diagnosis of rheumatic fever, rheumatic heart disease or subacute bacterial endocarditis was made for any of these cases; and unrelated disease adequate to explain death was discovered in each one.

TABLE 3

CAUSES OF DEATHS OF 167 CASES OF RHEUMATIC HEART DISEASE AMONG ROUTINE AUTOPSIES AT THE CHARITY HOSPITAL IN NEW ORLEANS FROM JANUARY 1, 1935 TO JANUARY 1, 1945

	Cases	Per cent
Rheumatic heart disease	107	63.17
Bacterial endocarditis superimposed upon rheumatic heart disease	21	12.65
Other causes with rheumatic heart disease as an incidental finding	39	24.18

There were 21 cases in which bacterial

endocarditis was superimposed on rheumatic lesions; seven were in white males, eight in white females, three in colored males and three in colored females. Among these 21 were 15 examples of subacute bacterial endocarditis and six of suppurative endocarditis, three of the latter in white females and one each in white male, colored male and colored female. The mean age at death of these patients was considerably higher than that published by Hedley,[13] who reported 29.2 years as the mean age among 81 fatal cases of subacute bacterial endocarditis superimposed on rheumatic heart disease in the Philadelphia hospitals. In the present study, the mean age at death was 33.4 years. Laws and Levine[27] found a mean of 38.2 years, however, in a group of 43 such cases.

In this entire series of 167 cases, involvement of the mitral valve was not mentioned in nine; five of these had aortic stenosis alone and in the other four no valvular involvement was described. Severe, extreme stenosis of the mitral valve was seen in 30 patients (17.9 per cent) ; 53.3 per cent were in males and 46.7 per cent in females; 80 per cent were white, 20 per cent colored. In 42 (25 per cent) there were both mitral and aortic valves involved; in eight (4.8 per cent) the mitral, aortic and the tricuspid valves were involved; in seven (4.2 per cent) the mitral and the tricuspid valves were affected; and there was one instance of pulmonary valve involvement (0.6 per cent). Pericardial disease was detected in 45 cases (26.9 per cent). Of some interest is the associated luetic aortitis seen in eight cases (4.8 per cent) and diffuse glomerulonephritis in five cases (2.9 per cent) ; the mean age at death for the latter was 26 years of age.

TABLE 4

PATHOLOGIC FINDINGS IN 167 CASES OF RHEUMATIC HEART DISEASE AMONG ROUTINE AUTOPSIES AT THE CHARITY HOSPITAL IN NEW ORLEANS FROM JANUARY 1, 1935 TO JANUARY 1, 1945

Valvular Involvements

	Cases	Per cent
Mitral	158	94.01
Mitral and aortic	42	25.15
Mitral, aortic and tricuspid	8	4.79
Mitral and tricuspid	7	4.19
Mitral, aortic and pulmonic	1	.59
Aortic alone	5	2.98
Valvular involvement not mentioned	4	2.34
Mitral stenosis	30	17.96
Male	16	53.33
Female	14	46.67
White	24	80.00
Colored	6	20.00
Aortic stenosis	12	7.18
Male	12	100.00
Female	0	0.0
White	9	75.00
Colored	3	25.00
Pericarditis		
	45	26.94
Associated Luetic Aortitis		
	8	4.79
Associated Glomerulonephritis		
	5	2.98

CONCLUSION

There are great variations in the methods used for determining the incidence of rheumatic heart disease. This is accounted for in part by the fact that rheumatic fever is not a reportable disease, and thus incidence figures must be compiled from hospital records. There are no uniform criteria by which hospital incidences are determined. Figures obtained from different reports but from the same locality may vary considerably. This series from the Charity Hospital in New Orleans included only those cases which were definitely classified as "rheumatic" by the pathologist. Obviously many examples of "clinical" rheumatic heart disease must have been omitted from this study. Nevertheless, the incidence of rheumatic heart disease in this area, evaluated on the basis of distinctive pathology, is higher than is commonly supposed, and not strikingly lower than in the North. The danger, however, of drawing too definite a conclusion on the basis of this comparatively small series is still present.

The number of cases of fatal rheumatic heart disease can give only a hint of the incidence in any community. If rheumatic fever in the South is milder than in the North[1, 2, 8, 17] and therefore less apt to terminate fatally, then the same autopsy incidence figure would indicate a greater incidence of rheumatic heart disease in the living population of the South than it would in the North. Perhaps too much importance has been placed on the geographic location as a conditioning factor in the incidence of rheumatic fever and not enough emphasis on the strictly local characteristics, such as the urban or rural communities, relative age of the population, economic status of the people, and local changes in humidity and temperature.

SUMMARY

Twelve thousand three hundred and seventeen routine autopsies from the Charity Hospital of Louisiana at New Orleans were reviewed for anatomically proved cases of rheumatic heart disease. For the ten year period from January 1, 1935 to January 1, 1945, 167 cases were discovered, 1.35 per cent. Of these, 103 occurred in the period from January 1, 1940 to January 1, 1945, an incidence of 1.91 per cent rheumatic heart disease among routine autopsies in the past five years. These figures approach very closely those obtained from similar studies carried out in Northern cities.

There were no extreme, wide racial differences in incidence, but age at death and cumulative deaths by age decades indicate that rheumatic fever runs a shorter and a more severe course among negroes. It may also be inferred that rheumatic fever is more malignant in females.

The mean age at death did not vary significantly from figures obtained from the Northern cities, indicating that rheumatic fever may not necessarily be more benign in the South.

Of the 167 rheumatic heart disease cases diagnosed anatomically, 67 per cent showed evidence of active rheumatic infection. Comparisons of active and inactive groups show that the critical period in the rheumatic patients are the early years after the onset of the disease, when exacerbations are most likely to occur. Rheumatic heart disease was found to be the cause of death in 63 per cent of the cases; in 24 per cent rheumatic lesions were incidental observations at autopsy; and in 12.6 per cent bacterial endocarditis superimposed upon rheumatic lesions was the cause of death.

Twenty-one cases were found in which bacterial endocarditis was superimposed upon rheumatic lesions. In 94 per cent of the cases the mitral valve was involved, both the mitral and the aortic valves in 25 per cent, the involvement of the mitral, aortic and the tricuspid valve in 4.8 per cent, and the mitral and the tricuspid valves in 4.2 per cent of the cases. One instance of pulmonary valve involvement was seen (0.6 per cent). Extreme mitral stenosis was noted in 17.9 per cent of the cases and pericardial involvement in 26.9 per cent. Associated luetic aortitis was present in 4.8 per cent and glomerulonephritis in 2.9 per cent of the cases.

From this study, it appears that geographic location alone is not a very important factor in estimating incidence of rheumatic fever. The New Orleans area apparently presents a much higher incidence of rheumatic heart disease than is commonly credited to that region.

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HEMOLYTIC ANEMIA OF THE NEWBORN (ERYTHROBLASTOSIS FETALIS)*

REPORT OF CASES

RUTH G. ALEMAN, M. D.†

NEW ORLEANS

Most of the available knowledge on the subject of hemolytic anemia of the newborn in its present concept dates back only to 1940. At that time Landsteiner and Wiener[1] reported the existence of a newly recognized antigenic constituent of the red blood cells of the majority of human beings which they called Rh because of its initial recognition in the red blood cells of the rhesus monkey.

While antibodies against this antigen do not occur normally in human plasma, it has been shown that under certain conditions of stimulation they may exist in persons devoid of antigen.

Based on the recent work of Levine it is now established that in hemolytic anemia of the newborn the fetus inherits the Rh factor from a father with Rh positive blood. "In more than ninety per cent of the cases the factor is present in the father's blood, Rh+, absent in the mother's blood, Rh—, while the blood of the fetus must possess it, Rh+."[2]

The essential steps in the development of hemolytic anemia of the newborn are: "(1) The response of the Rh— mother to the foreign Rh+ fetal blood by the production of anti-Rh agglutinins and (2) the continuous passage of maternal anti-Rh agglutinins through the placenta to react with and hemolyze the susceptible fetal Rh+ blood."[2]

The Rh agglutinogen (fetal blood) passes through some break in the placental barrier to the maternal circulation and stimulates the production of antibodies which diffuse back into the fetus and destroy its red blood cells,—only if the maternal and fetal blood are incompatible.

In some cases postpartum anemias, out of proportion to the blood lost at the time of delivery, occur. The possibility of the isoimmunization mechanism working in reverse must be thought of. With an Rh positive mother carrying an Rh negative fetus, through intermixing of maternal and fetal blood, the fetus may produce Rh antibodies capable of attacking the mother's red blood cells and causing anemia.[3]

CASE No. 1

Baby R., the fourth sibling, was delivered normally at term, weighing 8 pounds, 7 ounces. He was referred immediately after birth because of intense jaundice, with numerous purpuric spots scattered over the entire body. The right scrotum was filled with blood. The corneal conjunctivae bulged with hemorrhage. There was both splenomegaly and hepatomegaly. The respiration was rapid and irregular. The urine was markedly bile stained. See plate 1 for laboratory findings, treatment and progress.

It is interesting to note that the first two children in this family were entirely normal while the third child, soon after birth, developed a profound anemia which necessitated immediate blood transfusion and subsequent iron and liver therapy.

The blood of this entire family was submitted to Drs. Philip Levine and John Davenport for studies of the Rh factor. Both agree that "This

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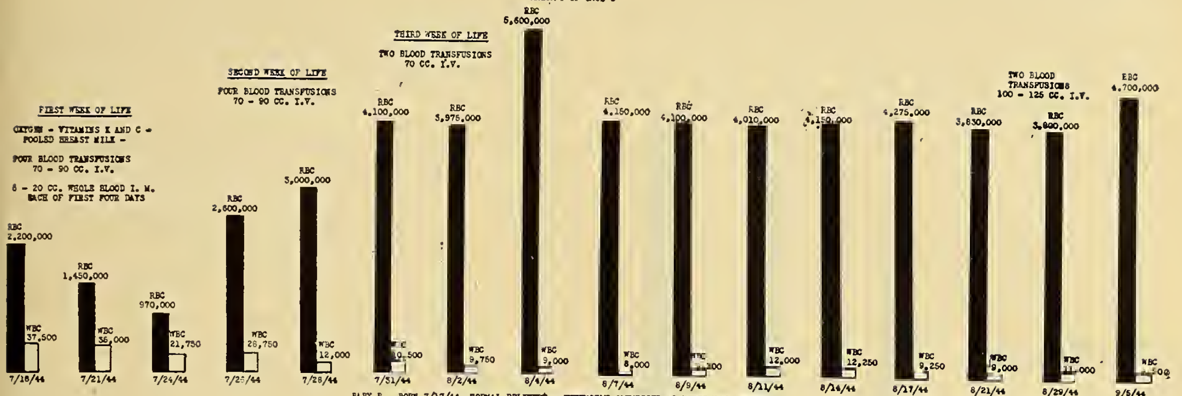
*Presented at Hotel Dieu Staff meeting, New Orleans, La., June 25, 1945.

†From the Department of Pediatrics, Louisiana State University School of Medicine.

PLATE 1
SUMMARY OF CASE 1



BABY R. BORN 7/17/44. NORMAL DELIVERY. INTENSELY JAUNDICED AT BIRTH WITH NUMEROUS PURPURIC SPOTS ALL OVER BODY. HEMORRHAGES INTO CONJUNCTIVAE. RIGHT SCROTUM FILLED WITH BLOOD. SPLEEN THREE FINGERS BELOW COSTAL ARCH.

case presents a typical history and serological findings of Rh iso-immunization resulting from pregnancy. The mother is Rh— while the father and the four boys are all Rh+. The father is Rh_1, Rh_2. This, together with the fact that all four children are also Rh+, is strong evidence that the father is homozygous (Rh Rh)."

CASE No. 2

Baby P., full term, first sibling, weighing 6 pounds, 2 ounces, was delivered by low forceps. Intense jaundice was noted the first day of life. This newborn was referred on the second day because of jaundice. The red cell count at this time was 915,000, white blood count 30,000. The mother was Rh negative, the baby was Rh positive. The father, being overseas in service, was not tested. For details see plate 2.

CASE No. 3

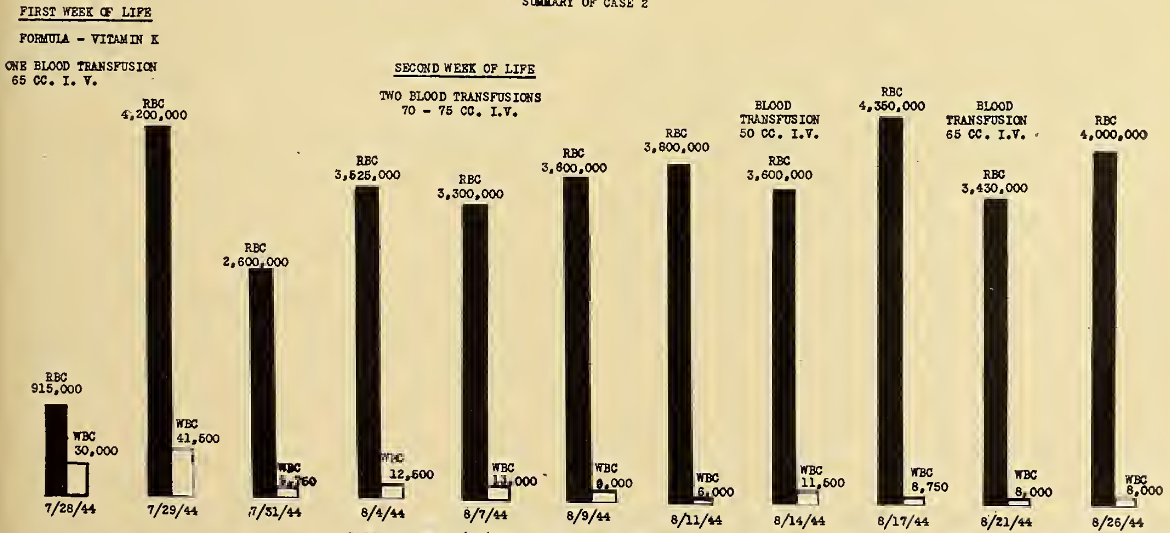
Baby W., first sibling, full term, normal delivery, weighing 8 pounds, 7 1/4 ounces, was markedly jaundiced on second day of life. When Rh studies were made, the mother was found negative, the father and baby Rh positive. See plate 3.

SUMMARY

Three cases of hemolytic anemia of the newborn treated in 1944 are reported. Two cases presented the extreme picture of this condition, jaundice, marked anemia, edema, erythroblastemia. The third case was mild in type. In two cases (case 1 and case 3) the Rh factor was typical (father and baby Rh positive, mother Rh negative). In case 2 the mother was Rh negative, the baby Rh positive. The father who was in service was not examined.

The treatment consisted of transfusions with Rh negative blood, vitamin K, vitamin C and oxygen. All three babies recovered, were normal at two months of age and their

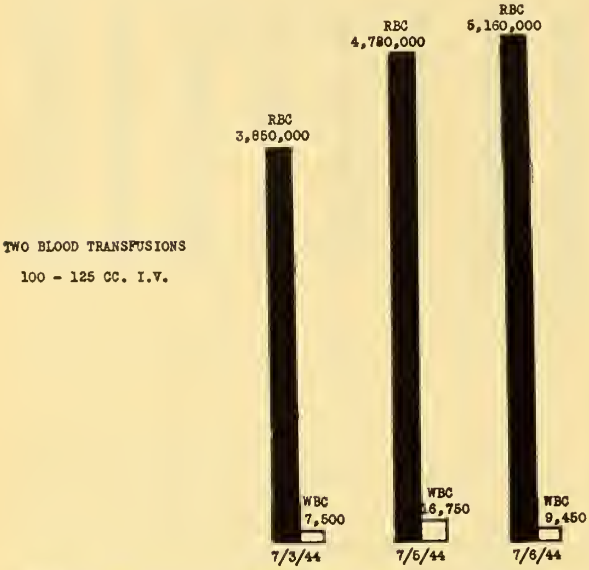
PLATE 2
SUMMARY OF CASE 2



BABY P. BORN 7/26/44. LOW FORCEPS DELIVERY. INTENSELY JAUNDICED AT BIRTH. SPLEEN TWO FINGERS WIDTH BELOW COSTAL ARCH.

subsequent course for the first year of life excellent.

PLATE 3
SUMMARY OF CASE 3



BABY W. BORN 6/29/44. MARKED JAUNDICE SECOND DAY OF LIFE.

CONCLUSION

The subject of hemolytic anemia of the newborn should be of interest not only to pediatricians but to all medical practitioners, especially obstetricians, for early recognition and treatment are important. My purpose in presenting these cases is to emphasize the fact that hemolytic anemia of the newborn is not necessarily fatal. On the contrary, with early treatment the outlook is often optimistic.

Medical science may count another triumph in the recognition and cure of hemolytic anemia of the newborn. The studies of the Rh factor and the method of cure are too recent to predict the behavior of the blood in later life in relation to so-called "bleeders"—but the important thing to remember is that babies born with hemolytic anemia need not die. Early and proper treatment will often save them.

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FATAL MEDITERRANEAN (COOLEY'S) ANEMIA

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and
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NEW ORLEANS

The occurrence of fatal Mediterranean erythroblastic anemia in the fourth, the seventh and the eleventh child born of Sicilian parents is reported in this paper. Observations on one of these patients, the eleventh sibling, are presented here in detail, whereas comments on the remaining two victims of the disease are outlined rather briefly.

Mediterranean or Cooley's erythroblastic anemia was identified by Cooley, Lee and Witwer approximately 25 years ago as a familial disease entity peculiar to the children of inhabitants of the north shore of the Mediterranean Sea, especially those of Italian and Greek parentage. The first clue which led to the identification of Mediterranean anemia was the distinct resemblance to the Mongoloid race which these patients may acquire during the course of the disease. This characteristic is due partly to the development of a yellowish pigmentation of the skin and partly to progressive thickening of the malar eminences, and of the skull.

Since the original report which identified Mediterranean anemia appeared many articles dealing with the disease have been published. References to some of these publications are recorded in the list of literature included in this paper. As a result of these and other publications detailed information relative to the characteristics of the disease is available.

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In the more severe examples of Mediterranean anemia the initial symptoms include pallor, anorexia, weakness and increasing prominence of the abdomen due chiefly to progressive enlargement of the spleen. Later, hypertrophy of the liver augments the abdominal protrusion. The disease tends in general to pursue a very uniform course which usually features no special complications. Long stationary periods during which the patients are comparatively comfortable may be interrupted, however, by exacerbations associated often with infection, but definite hemolytic crises and joint pains are not a part of the clinical picture.

In the more advanced stages of the disease the erythrocytes are greatly reduced in number and the color index is low. An abundance of nucleated red cells in every stage of development and the presence of many hypochromatic macrocytes measuring 15 microns or more in diameter constitute two additional characteristics of the disease. Microcytes, poikilocytes, reticulocytes and fragments of red cells are also abundant in the stained smear. The fragility of the erythrocytes in hypotonic saline solutions spans a wider range of resistance than normal. Some investigators consider this an important and constant characteristic of the disease.

The leukocyte count is constantly elevated but otherwise it usually discloses nothing distinctive. In advanced stages of the disease the increase in the number of granulocytes and of immature cells may be sufficient to suggest myeloid leukemia. The platelet count is not greatly altered except that a sustained increase in their number may follow splenectomy.

During the course of the disease bone changes become increasingly conspicuous on roentgenograms. The alterations become evident first in the small bones of the hands and feet but later other parts of the skeleton are noticeably involved. The cortex of the long bones becomes thin owing presumably to the constant pressure of the proliferating marrow. This change widens the bones and gives them a strikingly transparent appearance on the x-ray plate. In addition the trabeculae become relatively conspicuous especially in the region of the ends of the diaphyses. Later the flat bones, and particularly the skull are involved. The calvarium undergoes great thickening and becomes increasingly porous owing to expansion of its medullary portion. Accompanying this change the inner and outer tables of the cranium, particularly the latter, become very thin and the trabeculae spaning the intervening space are eventually converted into delicate spicules which on the x-ray film resemble radiating bristly hairs attached to the inner plate of the calvarium.

The preceding discussion applies to the more serious and readily identified forms of Mediterranean anemia. Recently evidence has been presented indicating that the disease spans a continuous range of severity varying from extremely mild to very grave forms. Apparently the former outnumber the latter. This view is based on the fact that studies of the blood of siblings and parents of patients with well advanced Mediterranean anemia have disclosed a relatively high familial incidence of individuals who present some evidence of milder forms of the disease. The blood changes found in these patients include varying degrees of refractory hypochromic anemia associated with the presence of microcytes, hypochromatic macrocytes, reticulocytes, stippled cells, and increased resistance to hypotonic sodium chloride solutions. Demonstration of the presence of a few or all of these characteristics in the blood of relatives of the patients with severe Mediterranean anemia aids in the recognition of the milder forms of the disease.

The severe variety of Mediterranean anemia with conspicuous changes involving the blood and bones progresses to a fatal issue in the course of a few years, whereas the very mild forms of the disease may have little or no apparent effect on the health and longevity of the patient.

Since the disease does not respond to any known form of treatment the therapy is limited chiefly to transfusions which merely provide temporary benefits. Splenectomy is commonly followed by an increase in the number of nucleated red blood cells and the procedure does not stop the progress of the anemia. Consequently this therapeutic measure probably should not be recommended. Furthermore the application of deep x-ray therapy to the spleen and long bones is of doubtful value.

The patient with whom this communication is chiefly concerned was the eleventh child born of Sicilian parents. At the time of birth (July, 1931), she weighed eight pounds. She started to walk and to talk shortly before her first birthday and she was breast fed for two years. Her health appeared to be excellent until the age of nine months, when a definite pallor associated with the development of a yellow discoloration of the skin became apparent. At the same time enlargement of the child's abdomen attracted the mother's attention. On examination the tip of the spleen was found at the level of the umbilicus, and the margin of the liver was palpated five centimeters below the costal arch in the midclavicular line. The bones appeared normal on x-ray study and the blood examination revealed no abnormality except a slight secondary anemia.

At the age of 18 months (November, 1933) the child had developed Mongoloid features owing chiefly to the increased prominence of the malar eminences. X-ray examination now disclosed increased trabeculation of the metacarpals, phalanges and long bones, and in the long bones marked thinning of the cortex was obvious. The inner and outer tables of the skull also appeared thin, and a marked widening of the diploe was present. The Wassermann test was negative and examination of the blood disclosed 3.89 million erythrocytes, 50 per cent hemoglobin, moderate anisocytosis, poikilocytosis and polychromatophilia, 13,500 leukocytes of which 70 per cent were lymphocytes. In addition 270 nucleated red cells per cu. mm. were present.

In March, 1934 a splenectomy was performed. Immediately prior to operation examination of the blood disclosed 3.89 million erythrocytes, 50 per cent hemoglobin; 13,500 leukocytes of which 68 per cent were lymphocytes, and 260 nucleated red cells per cu. mm. One day following a transfusion of 150 c. c. of blood the spleen was removed. A re-examination of the blood made thirteen days following the operation disclosed 4.19 million red cells, 65 per cent hemoglobin, 61,700 nucleated erythrocytes and 33,000 leukocytes of which 61,31, 8 per cent were neutrophils, lymphocytes and myelocytes, respectively.

In October, 1942 a study of the phosphorous of this patient's blood was undertaken with the cooperation of the Department of Pediatrics at Louisiana State University Medical School. The results of the one analysis we were permitted to make are recorded in table 1. The normal values shown in this table were compiled from reports in the literature.

The analysis of the patient's red cells gave abnormally high values for total and lipid phosphorous and a low value for the total esterphosphate. On fractioning the latter, evidence was found that a reduction in pyro, hexose, and glycerophosphate contributed in each instance to the decline in the total esterphosphate of the erythrocytes.

Examination of the plasma disclosed two values which were definitely abnormal, namely the low content of lipid phosphorous and the exceptionally high level of esterphosphate. The abundance of plasma esterphosphate suggests that this substance was being liberated in considerable quantity from the erythrocytes which were undergoing fragmentation and destruction.

The phosphorous values computed for the patient's whole blood on the basis of a known corpuscular volume of 25 per cent and on the analyses of the red cells and plasma indicated essentially normal levels for total and inorganic phosphorous, and abnormally high value for lipid phosphorous and a low level of esterphosphate.

During November, 1942 the patient's tonsils were removed and following this operation her condition was apparently satisfactory for approximately one month. At the conclusion of this period she became ill while attending a picture show. Her symptoms were vague and her physician made a tentative diagnosis of mild influenza. When she entered the hospital on the sixth day of this illness she had marked dyspnea. The patient died 24 hours later at the age of 11 years. The postmortem examination was made by Dr. E. H. Lawson, pathologist at the Baptist Hospital.

At the time of necropsy her body length was 46 inches. The child was well nourished and there was no enlargement of the superficial lymph nodes. The abdomen protruded owing chiefly to enlargement of the liver, the free margin of which was at the level of the anterior superior iliac spines. The liver weighed 1735 grams. The remaining abdominal organs appeared to be normal. A few adhesions were present in the left upper quadrant and were attributed to the splenectomy that had been performed.

The heart weighed 320 grams. It was markedly enlarged owing partly to hypertrophy of the left ventricle but chiefly to dilation of the right ventricle. The valves appeared to be normal and the coronary arteries were patent at their respective origins.

The lungs were normal except for the presence of adhesions on the right side which practically obliterated the pleural cavity. There was no transudate or exudate in the pleural, pericardial or peritoneal cavity.

A lymph node and a specimen of liver were the only tissues available to us for detailed study. The histologic examination was made by Dr. J. R. Schenken, former professor and director of the Department of Pathology at Louisiana State University Medical School. His report is as follows:

Lymph Node: The general architecture is fairly well preserved. The peripheral sinus is patent. The lymph follicles are smaller than normal, are well formed, and show no hyperplastic germinal centers. At the periphery of the lymph node, for a distance of approximately one low-power field, there is a generalized hyperplasia of the reticulo-endothelial cells, intimately intermingled with the lymphoid tissues. All of the large reticulo-endothelial cells contain many brown-staining granules of hemosiderin pigment. Directly beneath the capsule, there is a greater concentration of reticulo-endothelial cells, each of which contains large quantities of hemosiderin pigment. In the center of the tissue, the sinuses are all dilated and filled with a pale, granular coagulum. In some cases, these spaces are at least as large as thyroid acini. Here the sinusoids are all very much enlarged and filled with closely packed hyperplastic reticulo-endothelial cells filled with hemosiderin pigment. Only small masses of lymphoid cells are present between these hyperplastic reticulo-endothelial cells.

Diagnosis: Hyperplasia of the reticulo-endothelial cells; lymphostasis; hemosiderosis; the hemosiderin pigment was proved to be iron-containing by the Prussian blue reaction.

Liver: The general architecture of the liver is preserved. The liver cords are disturbed, however, in their courses, frequently by connective tissue which emanates outward from the periportal connective tissue. In some instances, this reaches as far as the adjoining portal canal, but in others, it only spreads out for a short distance. In many cases, fragments of liver cords are caught within this scar tissue. There are no nodules of regeneration of liver cells. The liver cords themselves appear to be somewhat thinner than normal, and the sinusoidal spaces relatively larger than normal in most cases. The cytoplasms of the cells contain numerous granules of hemosiderin pigment which are uniformly dispersed throughout the cell. The nucleus contains no pigment. The Kupffer cells are increased in size and in number and also contain hemosiderin pigment, but their importance as pigment carriers is overwhelmed by the large quantities of pigment found in the liver cords themselves. In a few areas, there are foci of cells of the myeloid series which appear to be in various stages of development and these indicate extramedullary hematopoesis.

Diagnosis: Hemosiderosis of the liver; early pigmentary cirrhosis of the liver.

This patient had a sister and a brother who died of Mediterranean anemia at the ages of 5 and 10 years, respectively. During infancy each of these children developed an anemia and yellowish discoloration of the skin. These changes were accompanied and followed in each instance by progressive enlargement of the abdomen, splenomegaly, marked changes involving the erythrocytes and the gradual development of Mongoloid features and extensive characteristic changes in bones. The remaining eight children in this family appear to be well. No studies have been made, however, to detect mild forms of the disease in members of the group.

SUMMARY

Fatal Mediterranean (Cooley's) anemia in three of eleven siblings born of Sicilian parents is reported. Observations on only one of these patients are presented in detail. A study of phosphorous of the blood of this child's red cells and plasma disclosed the following findings:

(a) Analysis of the erythrocytes revealed abnormally high values for the total and lipid phosphorous and low values for the total esterphosphate and each of its fractions.

(b) Analysis of the plasma disclosed a low level of lipid phosphorous and an exceptionally high level of esterphosphate.

The excess quantity of esterphosphate in the patient's plasma may have been derived from the erythrocytes which were undergoing fragmentation and destruction.

Microscopic examination of a lymph node and a specimen of liver, the only tissues available to us for detailed study, disclosed hemosiderosis, lymphostasis and hyperplasia of the reticulo-endothelial cells of the lymph node and hemosiderosis and early pigmentary cirrhosis of the liver.

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TABLE 1.

PARTITIONING OF PHOSPOROUS OF RED BLOOD CELLS AND PLASMA IN MEDITERRANEAN ANEMIA

	Age in Yrs.	Total Phosphorous	Inorganic Phosphate	Lipid Phosphorous	Esterphosphate			
					Total	Pyro-Phosphate	Hexose-Phosphate	Glycero-Phosphate
				Red Blood Cells				
Normal	12 - 15	77.1	4.8[2]	16.1[1]	56.2[1]	13.1[2]	12.8[2]	32.5[2]
Mediterranean Anemia	11	99.5	4.6	71.6	23.3	3.4	7.6	12.3
				Plasma				
Normal	12 - 15	13.8[1]	4.7[1]	8.6[1]	0.6[1]			
Mediterranean Anemia	11	14.6	5.5	2.5	10.5			
				Whole Blood				
Normal	12 - 15	39.7[1]	4.2[1]	11.6[1]	21.8[1]			
Mediterranean Anemia	11	35.8[2]	5.2	19.8[2]	13.6[2]			

1. See Stearns and Warweg.
2. See Behrendt.

SOME PSYCHOLOGIC HAZARDS IN THE ADOPTION OF A CHILD

MILTON E. KIRKPATRICK, M.D.†

NEW ORLEANS

A physician who participates directly in arranging the adoption of an infant or child usually assumes a great responsibility. Inherent hazards in this process can and should be borne by properly constituted socio-legal agencies. In the final analysis, adoption is a function of social worker and court—with physicians, psychologists, religious groups and other interested parties acting only in an advisory capacity. The physician who oversteps his proper boundary will ultimately bring trouble to all concerned. Obstetricians and pediatricians should be particularly aware of important psychologic factors involved in the adoption procedure.

There is no need to call attention to the current prevalence of neurotic illness among both adults and children. Improper adoptions play a significant role among these. A little thought devoted to the hazards involved may prevent many avoidable psychologic sequelae. Retrospective analysis of successful and unsuccessful adoptions furnishes some knowledge of the elements that make for success or failure.

It is extremely important to establish as objectively as possible the motivating factor in any adoption. Often this is obscure and conjures up primitive and fundamental aspects of parenthood, such as the much disputed "maternal instinct." It may not be out of place here to comment on the place of children in a primitive culture—their contribution to tribal relationships. Primitive tribes in many instances did not associate the sexual act with conception or the bearing of children. Offspring were an indication that primitive deities approved the marriage or perhaps even the conduct of the tribe in general. Abundant crops also denoted the favor of the gods, consequently a lack of abundance of either crops or children was apt to be interpreted as punishment. The barren woman became an outcast. If she did not bear children, it was because the gods did not look with favor upon her. Her husband could send her back to her father and demand a refund of the purchase price. Primitive man did not look very far for an answer to his problem!

Children can be symbolic of sexuality. They signify their parents' ability to fulfill a biologic function necessary for perpetuation. How often have we heard the husband of a childless marriage referred to facetiously by his friends as being "no good." How frequently have we heard a woman say almost apologetically "We have no children." A childless marriage is a threat to perpetuity and may damage the self-esteem of the individuals involved. Physicians, psychiatrists and social workers have all encountered resultant familiar patterns: A housewife, no longer able to bear the taunts of relatives and neighbors, journeyed to a distant city and returned in a few months with an infant she successfully presented as her own. A family adopted a child and moved to a distant city, carefully severing all connections with their past life. Consider all the emotional turmoil that must underlie precautions sufficiently elaborate to insure the success of such performances!

It is unwise to advise adoption glibly, simply because one, two or more adults are lonesome and want children to brighten their lives and afford some means of entertainment; this advice is usually misguided and serves only to shake an already insecure psychologic structure. An adoption must almost certainly fail when emotional needs of adults occupy the place of paramount importance. Temporary pleasure and comfort in caring for a helpless, dependent and attractive infant may soon be replaced by the emotional upheavals centering about certain behavior disorders of childhood and later more serious problems of growing adolescents. Most physicians have seen this pattern develop; they, as well as adoptive parents, should be completely and continuously aware of the fact that babies grow up!

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We have all seen parents—natural or adoptive—whose greatest expressed need seems to be for appreciation. "Look at all we've done for him . . . (innumerable details) . . . and he doesn't appreciate us." Expectation of tangible evidence of real gratitude or appreciation almost always leads to disappointment. Appreciation of the child by the parents determines to a large extent that child's attitude toward his parents. One of the greatest rewards and satisfactions of parenthood is honest appreciation—but such appreciation is never automatic.

Sympathy or pity alone is a poor reason for adoption. "We both felt so sorry for him. He was the kind of child your heart went out to." We recently encountered two sad results: Influential couples had visited orphanages, selected pathetic, malnourished infants and had been able to rush through adoptive proceedings, "cutting a lot of legal red tape." Later both children were found to have hereditary and familial diseases; one was a severe epileptic, the other spastic and feebleminded. Careful study and proper procedure almost surely could have avoided these needless heartaches. Combined with good judgment and other valid reasons for adopting a child, these motives may sometimes be deservedly admired. Some adoptive parents boast openly of such "poor risks", as though actually inviting or seeking admiration for their courage. Pity is an unworthy motive for adoption; there is a vast difference between love and sympathy.

No adoption is likely to succeed unless both parents are committed to it. All too often we find the mother to be the only party genuinely interested, the husband exhibiting a tolerant or passive attitude: "Let the wife have her way." Many women have the mistaken notion that a child in the house may reform a wayward husband. On the contrary, such an addition usually only creates new problems—and consider the rejection to which the child may be exposed when such a plan fails. On the other hand, some happily married though childless couples honestly feel that a child in the home would make their happiness just a little more complete; an unfortunate result of adoption in such an apparently benign situation has recently come to our attention. A father's tremendous attachment to a ten-year-old girl adopted in infancy has led to jealousy and feelings of guilt on the part of the mother. The little girl has unwittingly come between this couple and brought their marriage close to disaster.

Five years ago, a young couple, on advice of their family physician, took a newborn infant who had been abandoned by an unmarried mother. Caring for this baby became the most satisfying experience in their lives. A legal adoption was never completed, however, as the mother never signed a release. Now, with improved fortune and a successful marriage to an understanding husband, the real mother demands return of her child, and legal counsel finds no alternative. The consequences are not difficult to imagine, and the responsibility rests quite squarely on the physician's hasty attempt to find a solution to an unpleasant situation.

Regardless of how much information a physician may have concerning the child or prospective adoptive parents, he should never specifically recommend adoption. The risks are too great, requiring almost foolhardy courage. After careful investigation and evaluation conducted objectively by impartial workers—and always including a trial period of placement—he should merely point out the assets and liabilities involved. The responsibility then lies solely with the court and the adoptive parents.

Infants are often adopted so early or so hastily that no adequate study of background, physical condition, mental status, or estimate of future capability can be made. Many sad results of this unfortunate error are brought to our attention each year. Exclusion of congenital syphilis by appropriate means should be insisted upon in every case. Of even greater importance, though not as quickly accomplished, are studies justifying more than a casual evaluation of developmental or mental status. No effort should be spared to exclude objectively uncorrectible disease of mind or body and to ascertain that the child is educable at least to the level of eventual self-support. We then may be able to avoid the tensions and frustrations in the adoptive home where parents have intended to give the child a college education only to find, after repeated school failures, that his intelligence is limited to seventh grade achievement.

A physician should not advise or actively participate in arranging adoption of a child. If the physician has knowledge of a child apparently suitable for adoption, he should direct the mother to the proper social agency where she may execute a release. If he knows of a family who wish to adopt a child, he should refer them to this same agency. Complete information regarding agencies doing adoption work may be obtained through the Community Chest in our larger cities. In rural areas the State Department of Child Welfare should be contacted. Copies of the laws pertaining to adoptions may be obtained through that agency.

This subject of adoptions has assumed such importance in recent years that the Editor of the Journal of the American Medical Association took occasion to comment on it recently in the editorial columns as follows:

"The control of illicit traffic in babies requires that all adoptions should be a matter of public concern. The state, in taking control, has developed certain general principles which have been republicized by the United States Children's Bureau. The general principles which should govern adoption are set forth by the bureau as follows:

"1. Adoption proceedings should be held before a local court accustomed to handling children's cases; petitioners for adoption should reside and be known locally.

"2. The court should have the assistance of the state welfare department, which should be made a party to every adoption proceeding.

"3. Consent to adoption should be obtained from natural parents or other persons or agency having legal responsibility.

"4. Court hearings should be closed and records confidential.

"5. A trial period of residence, preferably for one year in the adopted home, should be required prior to issuance of the final adoption decree.

"6. Provision for removal of children from unsuitable homes should be made as well as provision for their care and guardianship after such removal.

"7. All applicable statutes should assure the welfare of the child and the rights and obligations of the parents."

There is probably nothing in the American way of life more universally satisfying than a happy home where children are loved and appreciated. That children are impossible in some marriages is not always an irremediable misfortune. Many intelligent couples have found tremendous satisfaction and happiness in taking into their little family group a child of a union which has failed to provide him not only with the securities of childhood but with the love, acceptance and tolerance so essential for the development of a healthy adult personality.

HYPERTROPHIC PYLORIC STENOSIS

(ANALYSIS OF THIRTY-SEVEN CASES AT CHARITY HOSPITAL)

L. J. O'NEIL, M. D.†

NEW ORLEANS

The purpose of this paper is to report recent changes in the mortality rate observed at Charity Hospital for congenital hypertrophic pyloric stenosis and to consider some of the factors responsible for these changes.

In a study covering the five year period which immediately preceded the years considered in this communicatian (1939 to 1945) Romano and McFetridge[1] reported a mortality of 34.4 per cent in a group of 32 infants with hypertrophic pyloric stenosis. Fourteen of these patients were treated medically with six deaths and 18 were treated surgically with five deaths. Romano and McFetridge were inclined to attribute this excessive mortality to the prolonged medical treatment undertaken prior to surgery.

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Between January, 1939 and October, 1945, the 36 infants with whom this paper deals were operated upon at Charity Hospital for hypertrophic pyloric stenosis. The results were as follows:

	Cases	Deaths	Mortality
1939	3	1	33.3
1940	4	2	50.0
1941	10	1	10.
1942	6	0	0.
1943	4	0	0.
1944	6	0	0.
1945	3	0	0.
	36	4	10.8

The infant who died in 1939 had been given normal saline and glucose solution by hypodermoclysis for 19 days preoperatively. He expired 36 hours after operation and at necropsy the death was attributed to pyloric stenosis and marasmus.

During 1940 there were two deaths, one of which resulted from bronchopneumonia on the fourteenth postoperative day and the other from mesenteric thrombosis on the twenty-fifth day following operation.

The death in 1941 was due to generalized peritonitis secondary to penetration of the duodenal mucosa at the time of operation. This death occurred on the fourth postoperative day and it is the only fatality directly traceable to opening the mucosa of the duodenum. This accident occurred in 17 of the 36 cases reported in this paper. In each instance the perforation was closed and an omental graft was sutured over the site.

Between January, 1942 and October, 1945, 19 infants have been operated upon for hypertrophic pyloric stenosis without a death. During this period the preoperative period of preparation averaged four days, whereas prior to 1941 it averaged three weeks. This recent decline in the mortality rate for infants with hypertrophic pyloric stenosis observed at Charity Hospital is not due to the technical skill of any one surgeon. The patients reported in this paper were operated on by twenty different operators most of whom were members of the resident staff of the hospital.

Attention is again called to the fact that since January, 1942, 19 infants with hypertrophic pyloric stenosis have been operated upon at Charity Hospital with no mortality. This splendid result is attributed first to the preoperative care administered by the pediatric staff and second to prompt rather than delayed operation.

CONCLUSION

The recent decline in the mortality rate for congenital hypertrophic pyloric stenosis at Charity Hospital is attributed to efficient preoperative preparation followed by prompt surgical relief of the condition.

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CLINICO-PATHOLOGIC CONFERENCE

ACUTE LARYNGOTRACHEOBRONCHITIS VS. DIPHTHERIA*

WALLACE SAKO, M. D.†
and
JOHN R. SCHENKEN, M. D.†

NEW ORLEANS

A white female, aged 4 years, was admitted February 7, 1945 and died February 10, 1945.

Chief Complaint: Difficulty in breathing.

Present Illness: On February 5, 1945 the patient awoke with hoarseness of voice. The mother believed that the child had a cold and treated her with nose drops and cough syrup. The next day the patient began to cough and complain of sore throat. On February 7, 1945 a fever of 101° F. developed and the child began to have considerable difficulty in breathing which became progressively worse until admission to Charity Hospital.

Past History: The child enjoyed good health except for the usual colds, mild diarrhea, and an attack of measles in 1944. There was no history of immunizations and contact with diphtheria or other contagious diseases.

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System Review: Negative.

Physical Examination: Temperature 103.6° F. rectally, pulse 150 per minute, respiration 32 per minute.

The patient was a well developed, well nourished, white female child of 4 years lying in bed and having difficulty in breathing. The tonsils were moderately enlarged and the pharynx was red and inflamed but no membrane was visible. The lungs, according to the interne, were clear to auscultation and percussion. The next day, however, upon examination the chest revealed on auscultation loud sonorous rhonchi with fine crackling and coarse mucoid rales throughout both lung fields. The heart was normal except for the rapid rate. The abdomen, extremities, genitalia, and nervous system were negative.

Laboratory Data: Nose and throat cultures taken on admission revealed no diphtheria organisms but was positive for alpha streptococci. There was a polymorphonuclear leukocytosis. The urine, Kline and Kolmer, and Mantoux tests were negative. The Schick test was positive.

Course in Hospital: There was marked dyspnea with rapid feeble respirations and slight tugging of the infra- and suprasternal notches. An emergency tracheotomy was performed shortly after admission. The patient was given sodium sulfadiazine intramuscularly grains 1 1/2 per pound of body weight initially, followed by a maintenance dose of grains 1 1/2 per pound per day in six equal doses every four hours. Diphtheritic antitoxin 10,000 units was given intramuscularly. The next day an additional 50,000 units of diphtheritic antitoxin was given intramuscularly. On February 9, 1945 the respiratory distress became progressively worse. The patient was bronchoscoped and mucopurulent material was suctioned out. The bronchi appeared inflamed and edematous. Following bronchoscopic suction, the respirations improved slightly. The lungs revealed sonorous and mucoid rales. Penicillin was then started 20,000 units and 10,000 units intramuscularly every three hours. At 12:30 a. m. on February 10, 1945 the patient was breathing feebly and quietly. There was no cyanosis. The child was very restless, so phenobarbital was prescribed for sedation. At 4:30 a. m. the patient suddenly ceased breathing without struggling. An emergency bronchoscopy was done. The trachea was very edematous and was covered with thick plastic exudate which could not be removed. The patient expired at 4:50 a. m.

CLINICAL DISCUSSION

This is a 4 year old child whose history has been recorded above. The illness began with hoarseness which would point to laryngeal involvement. Fever initially was 101° F., then rose to 103° F., and finally to 104° F. There was marked and progressive respiratory embarrassment. Hoarseness, fever, and dyspnea suggest three conditions commonly encountered in a child of this age: (1) simple croup, (2) diphtheria, and (3) acute laryngotracheobronchitis.

1. *Simple Croup:* In this condition there are slight inflammation and spasm of the larynx giving rise to dyspnea and respiratory stridor. It commonly occurs in children between the ages of six months to five years. Characteristically the child appears perfectly well during the day except for slight hoarseness and cough. In the evening the hoarseness, barking cough, and dyspnea make their appearance and become progressively worse until midnight when dyspnea, cyanosis, and loud respiratory stridor with retraction of the infra- and suprasternal fossa and intercostal and supraclavicular spaces make their appearance. The child at this time is extremely restless, apprehensive, anxious and prostrated. The respirations are slow and labored, the cough loud and barking, the pulse rapid, and the temperature normal or slightly elevated up to 101° F. When daylight comes the symptoms gradually subside and the child lapses into a restful sleep. All during the day the child remains well except for slight cough and hoarseness. When nightfall comes the process repeats itself again and lasts for three to five days. Recurrent attacks may occur every few weeks or so but the prognosis is always good.

In this case, high fever up to 104° F., progressive non-spasmodic dyspnea without diurnal variations, lack of history of previous attacks, marked evidence of inflammation of the larynx, lack of response to ordinary measures, and the fatal termination would rule out the possibility of simple croup.

2. *Laryngeal diphtheria:* In a child of 4 years, fever and laryngeal involvement would necessitate a provisional diagnosis of diphtheria. No membrane was seen either in the pharynx on admission or in the larynx the next day. The pharynx was only slightly inflamed but the larynx was markedly

injected and edematous. This would tend to rule out diphtheria, although it might be possible that the membrane may not have been visualized due to severe edema. The majority of the cases of laryngeal diphtheria (75 per cent) is a direct extension from the pharyngeal involvement, and only about 25 per cent of pharyngeal diphtheria involves the larynx. Approximately 12½ per cent of diphtheria is purely laryngeal in character. A bronchoscopic examination following tracheotomy revealed edema and inflammation with mucopurulent exudate but no membrane. Since it is highly unlikely for diphtheria of five days' duration not to form a membrane, we should consider something else than diphtheria.

A temperature of 103-104° F. is higher than expected for diphtheria. A pulse rate of 150 per minute and extreme prostration are consistent with diphtheria. However, the patient did have a tremendous amount of dyspnea, which in a child of this age will cause the pulse rate to rise, and, consequently, we cannot say from the rapid pulse rate that the condition is diphtheria. The fact that the patient had received no immunization and the Schick test was positive are both highly significant. In reviewing all the cases of diphtheria admitted to Charity Hospital during the years 1941-1945, it was found that there has been no clinical case of diphtheria occurring in children who had been completely immunized against the disease. The fact that the patient did not come in contact with a diphtheria case is of no significance whatsoever.

Unfortunately direct smears were not done. The fact that one culture for diphtheria was negative does not mean much. The presence of diphtheria bacilli on culture gives a positive diagnosis; a negative culture does not rule out diphtheria. Treatment with antitoxin was justified in spite of the negative culture. Let us remember the admonition that any condition requiring a diphtheria culture justifies treatment with antitoxin.

The 10,000 units of diphtheria antitoxin administered intramuscularly was grossly inadequate. This is borne out by the fact that the interne was uneasy the next day and administered an additional 50,000 units intramuscularly. Divided dosage such as this is not as effective as a single adequate dose. All severe laryngeal cases should receive maximum dosage, possibly 100,000 units. Some clinicians say that pure laryngeal diphtheria requires a small dose since toxicity and absorption are not as great as the pharyngo-laryngeal form. This is not always true in my experience. At any rate, I would not take any chances.

The intramuscular route of administration should not be used in emergencies such as this. The absorption is too slow. The intravenous route should have been used for rapid effect. Response, then, should be apparent in six to 12 hours. By the intramuscular route, maximum absorption occurs in 24 to 48 hours. This is too slow in obstructive diphtheria cases. The subcutaneous route should never be used for therapy since maximum absorption occurs in 72 to 96 hours. I would have given this case 100,000 units of diphtheria antitoxin, 50,000 units intravenously diluted with at least an equal volume of normal saline or glucose solution and 5 minims of 1:1000 adrenalin solution and 50,000 units intramuscularly or all intravenously. Of course, sensitivity tests for horse serum should be performed and due precaution should be exercised in the administration of any heterologous serum.

3. *Acute laryngotracheobronchitis:* A temperature of 103-104° F. is more consistent with the diagnosis of acute laryngotracheobronchitis than of diphtheria. The interne who examined the child stated that the lungs were clear to auscultation and negative to percussion. When we examined the child, however, the respiration was so noisy and snoring that it tended to obscure the rales which were heard over both lung fields. The heart rate was very rapid as can be expected. The abdomen was negative. Upon close examination cyanosis was present although this was not noted by the interne. Dyspnea and toxemia were so marked that prostration and exhaustion were noticeable. The tremendous exudate

in the tracheobronchial tree plus marked exhaustion caused the respiration to become shallower and shallower so that under oxygen the respiratory excursions were scarcely noticeable. The anoxic condition made the child extremely restless. Apparently the final exitus with cessation of respiration was not a sudden process but a gradual one of drowning from the mucopurulent exudate in the bronchi and trachea. Consequently, no struggling occurred at the time of death.

Emergency tracheotomy was performed and rightly so. It is not always an easy problem to decide as to when tracheotomy is indicated. In pure laryngeal obstruction with marked retraction of the supra- and infrasternal notch the indications are clear cut and marked and prompt relief from dyspnea is obtained. In cases of dyspnea wherein the obstruction is not in the larynx but in the tracheobronchial tree, tracheotomy gives no relief. Other cases, such as the patient above, present obstructions in the larynx, trachea and bronchi and it is in these cases that decision for surgical intervention is difficult. The larynx is edematous and the trachea and bronchi are filled with a mucopurulent exudate. Tracheotomy may give no relief. Oftentimes the strain of subjecting the patient to surgery will in itself be fatal. Therefore, in dyspnea without a tug on the xyphoid, tracheotomy as a rule should not be done, and the patient should be handled conservatively. Since the primary difficulty is caused by the thick mucoid, or purulent exudate, from the theoretical standpoint, the ideal treatment would be some agent which can liquefy this exudate to permit the patient to cough it up or to permit absorption to occur. We do know that steam, carbon dioxide, and expectorants such as ammonium chloride and ipecac tend to liquefy exudates, whereas oxygen, heat, and atropine tend to thicken exudates in the tracheobronchial tree.

In the presence of dyspnea and cyanosis, it is difficult to decide whether oxygen, carbon dioxide, or steam is indicated. Carbon dioxide 5 to 10 per cent with oxygen 90-95 per cent has a dehydrating effect. Pure carbon dioxide has a liquefying effect but is dangerous to use for any length of time. It is impractical to combine steam and oxygen. The efficacy of a croup tent or oxygen tent can be determined only by trial; whichever makes the patient more comfortable and gives relief should be used.

Some cases of acute laryngotracheobronchitis are due to diphtheria but the majority are due to the streptococcus, pneumococcus, influenzal bacillus, and the staphylococcus or a mixture of these organisms. In our case a culture was not taken during life, so the etiologic agent was not known. Modern treatment offers a much better outlook for acute laryngotracheobronchitis. Sulfonamide therapy is successful in some instances, but at best the response is slow probably because of the thick muco-fibrinopurulent exudate in the presence of which the sulfonamide drugs will not often act due possibly to inactivation by para-aminobenzoic acid. Penicillin would be the drug of choice except in the influenzal type. In this case, sulfonamide was given in adequate dosage but penicillin was started late and was not given an adequate trial. If the etiologic organism is the influenzal bacillus, sulfadiazine and type specific anti - influenzal rabbit serum should be given. Alexander, of New York City, reports good results with the use of type B influenzal rabbit serum. The antiserum should be given in doses of four ampoules (100 mg.), two ampoules intravenously and two ampoules intramuscularly. If no improvement occurs in 24 hours, the dose should be repeated. If the etiologic organism is the type B influenzal bacillus response occurs in 48 hours.

Acute non-diphtheritic laryngotracheobronchitis is a serious disease, and in the severe form carries a high mortality. From 1936 to 1941, 140 such cases were treated in Charity Hospital with a mortality of 51 per cent. Most of these cases have had an emergency tracheotomy. In the pre-sulfonamide era, patients with acute laryngotracheobronchitis subjected to tracheotomy usually died either from the primary disease or from secondary infection with other organisms, usually the hemolytic streptococcus. To prevent secondary complications, all tracheotomized patients should receive sulfonamide and/or penicillin.

From the foregoing discussion, therefore, I believe that the diagnosis in this case is acute laryngotracheobronchitis probably due to the streptococcus. The high temperature, absence of membrane, and profuse mucopurulent exudate in the tracheobronchial tree point more strongly to the above diagnosis than diphtheria.

Clinical diagnosis: Acute laryngotracheobronchitis probably streptococcal.

PATHOLOGIC DISCUSSION

This is a well nourished and well developed child of 4 years who showed a considerable amount of rigor mortis which is what you would expect in an acute disease of this type. There was no discharge from the ears and nose. The lips were bluish. In the mid-line over the trachea, there is a recently made aperture that was obviously the tracheotomy wound which went into the trachea. The aperture is about one centimeter in diameter and contains a thick, greenish-yellow exudate. The fingernails, curiously, did not show any cyanosis. The peritoneal cavity showed nothing of importance. The pleural and pericardial cavities were both free of fluid and exudate. The heart was normal and weighed 65 grams. In a child 4 years of age the heart should weigh approximately 73 grams, so this heart can be considered as within normal range.

Lungs. The right lung weighed 115 grams and the left lung 105 grams. Their normal weights in a child of this age are 90 grams and 85 grams respectively so both lungs are somewhat increased in weight. The lungs contained air throughout except for some dependent areas of purplish discoloration. Frothy fluid exuded from the cut surfaces but there were no areas of granularity present. In other words, it was not the impression of the pathologist that pneumonia was actually present at the time the child died. The lower trachea and bronchi, although this is not visible on the slides, (which I will show you in a moment) were completely occluded with an extremely thick, tenacious, greenish-yellow exudate which was firmly adherent to the wall, just exactly as the clinician predicted. There was no membrane present *per se*—no membrane which looked like diphtheritic membrane. The mucosa was fiery red so the primary inflammatory reaction seems to have been in the trachea and larger bronchi.

Larynx. The larynx was injected and slightly edematous but no membrane was present.

Spleen. The spleen weighed 70 grams. The normal weight should have been 40 grams. So we have definite enlargement with very prominent Malpighian corpuscles and softening of the pulp as we would expect to see in severe toxic splenitis. In severe toxic splenitis in children, the Malpighian corpuscles become hyperplastic in a matter of days.

Liver. The liver weighed 950 grams in contrast to the normal weight of 516 grams at this age. It shows definite enlargement and the cut surface shows a preservation of the markings, a reddish-brown color of the parenchyma, and a group of bright yellowish nodules, pinhead in size, surrounded by a hyperemic zone.

Pancreas, adrenals, gastrointestinal tract, genito-urinary organs. These showed no important changes.

I will now show you some pictures of the organs. This is a dissected specimen showing the tongue, tonsils, epiglottis, larynx, trachea, and bronchi. The first thing that strikes you is the extreme redness of the mucosa of the trachea and bronchi. It is fiery red beginning way up in the epiglottis and ending in the larger bronchi. The other finding which is of great importance and interest was the exudate that was present. This is not so well seen now because it is glistening, somewhat translucent, and has sloughed off, but here and there you can still see remnants of this exudate. When the trachea and bronchi were first opened, they were completely occluded by this exudate. Here is a posterior view of the tracheotomy wound. The exudate present on the mucous membrane is clearly visible on this close-up view.

This is a section of the spleen. The pinkish gray mottled appearance is due to the hyperplastic Malpighian follicles. You will also notice that there is a red rim of homogeneous tissue all around the spleen. This is rather commonly seen. It is due to the fact that when the spleen is removed and is exposed to the air for a period of time, the blood at the periphery of the spleen becomes redder because of oxidation.

This is a cross-section of the trachea. It is an amazing section. Here are the tracheal rings and here is the lining of the trachea. Some of the submucosal tags are still present but there is complete absence of the mucous membrane and on the surface there is attached a very thick mucoid exudate which contains a relatively small number of inflammatory cells. This coagulation necrosis of the mucous membrane is a remarkable thing. There is practically no mucosa left except for some little ducts which we see going down to the mucous secreting glands. It differs from a diphtheritic membrane in that we see practically no fibrin. I would never have dreamed from the gross appearance that the mucous membrane would show so much necrosis.

This is a section of the tonsil which shows a normal appearance. Here is a section of the spleen which shows the large follicles and a large amount of edema, red blood cells, and polymorphonuclear leukocytes in the pulp. This is what you would expect to find with severe septic splenitis and accounts for the splenic enlargement. The section of the heart shows no abnormalities. The microscopic section of the lung shows that 75 per cent of the air containing spaces are filled with edema fluid with very few inflammatory cells. The increase in the number of polymorphonuclear cells in the alveolar wall shown here would add to this patient's distress. This is interstitial pneumonia which occurs quite frequently in children and oftentimes is the result of a blood stream infection. In this case we were unable to prove a blood stream infection because the postmortem blood culture was sterile.

The section of the liver shows a healing caseous focus surrounded by a zone of epithelioid cells. Obviously this is a lesion resulting from primary dissemination of the first infection type of tuberculosis. It is not miliary tuberculosis in the true sense since miliary tuberculosis is a clinical entity with progressive inoculations of numerous tubercle bacilli into a blood stream. In primary tuberculosis infection the bacilli lodge in various organs and then recede. The primary focus must be in the lung but we missed the boat somewhere since I cannot find it.

Postmortem culture from the trachea revealed Aerobacter, *Staphylococcus aureus,* and alpha streptococcus. From an etiologic standpoint these organisms are not significant and not very helpful in diagnosis. We know perfectly well that the alpha streptococcus can be routinely cultured from the nose and throat of normal individuals. Everybody harbors this streptococcus at all times, and this child may have been a carrier of this organism which might not have been etiologic.

Two mistakes were made here. In the first place a postmortem culture for diphtheria was not made because it was assumed that diphtheria was ruled out on clinical grounds and from the antemortem culture. The second mistake was that a direct smear of the exudate was not submitted with the culture. The reason for the primary or direct smear is this: suppose you have a mixed flora with some rapidly growing organisms in them as well as some delicately growing organisms, such as some strains of streptococci, the rapidly growing organisms would overgrow the more delicate organisms very quickly and as a result you would overlook the tiny little colonies in the culture plate. However, if you see a large number of chains of cocci on the primary smear then you would be certain that you are dealing with a streptococcus and you would look harder for the tiny colonies between the larger more luxuriant colonies. On section the bacteriologist found several groups of bacteria which look like streptococci. These streptococci may be etiologic:

The pathologic diagnosis is:

1. Acute laryngotracheobronchitis probably streptococcal.
2. Acute interstitial pneumonia—terminal.
3. Septic splenitis.
4. Fatty changes in liver, with edema.
5. Primary tuberculosis.

NEW ORLEANS
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Established 1844

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THE JOURNAL *does not hold itself responsible for statements made by any contributor.*

THE PEDIATRIC NUMBER

This is the first of a proposed series of December issues of this journal devoted exclusively to pediatric topics. Included in the present number are contributions originating from activities in the Departments of Pediatrics of Tulane and Louisiana State University medical schools. We hope that articles for later issues will be submitted by many other physicians in this field. The publication of "specialty numbers" is not a new editorial policy but serves a useful purpose both to stimulate interest in the various specialties and to organize related material.

The wide variety of problems in this issue should be of interest to all practitioners who deal with children. Uyeda's article stresses once more the importance of rheumatic infections in the South; these obviously are much more frequent than commonly believed. Cummins' discussion of genetic patterns should command wide interest. There are many lessons to be learned from the clinical pathological conference presented by Sako and Schenken. Early recognition and prompt treatment of hemolytic disease of the newborn is gratifying; Dr. Aleman reports three additional cases observed recently. Closer cooperation of pediatrician and surgeon is undoubtedly the major factor contributing to improved results in treatment of pyloric stenosis at Charity Hospital, as pointed out by O'Neil. Dr. Hansen's tables for dietary evaluation will be appreciated by many. A clear-cut statement of the doctor's role in adoption proceedings has been furnished by Kirkpatrick. Phillips and Stewart analyze the characteristic features of annular areas of pulmonary rarefaction observed in children convalescing from pneumonia. Williamson and Crawford have summarized available information concerning erythroblastic (Cooley's) anemia and reported their studies in a child observed over a period of several years.

It has been a great pleasure to prepare this "specialty issue", and it is hoped that physicians dealing with diseases of children will now find time to contribute suitable articles very soon for inclusion in the second number planned for next December.

R. V. PLATOU, M. D., and
C. A. STEWART, M. D.†

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ERYTHROBLASTOSIS FETALIS

Recent articles on erythroblastosis fetalis published in medical and lay journals emphasize the frequency of this condition and its gravity. Scientific discussions of the relationship of the Rh factor and its subdivisions to this disease are provided by the splendid treatises of Levine, Weiner, Race, Taylor, Davenport, and other investigators. This occasion is taken to stress only a few of the practical aspects of the problem the disease presents.

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†From the Departments of Pediatrics, Tulane University School of Medicine, and Louisiana State University School of Medicine.

Owing to the fact that the offspring particularly of an Rh positive father and an Rh negative mother may have erythroblastosis fetalis, all parents should have their respective Rh factor determined before their infant is delivered. Thus, prior to the birth of the child information of great value can be obtained relative to the probability that the expected infant may develop erythroblastosis fetalis, especially when the mother is a multipara. Furthermore, since a very minute quantity of Rh positive blood administered by any route to an Rh negative female may render the recipient liable for years to have offspring with erythroblastosis fetalis, the necessity for determining the Rh status of the donor each time blood is given to an Rh negative female infant, child, or adult is obvious. This recent advance enables physicians to avoid a previously unsuspected danger that lurks in intramuscular and intravenous injections of blood, which prior to the discovery of the Rh factor, was considered to be entirely satisfactory. We have undoubtedly entered the era when it is imperative that Rh negative donors be used no matter how little, by what route, or at what age in life blood is given to an Rh negative female patient.

It is now known that the Rh factor is a complex antigen possessed of many subfactors, and on this basis the occasional occurrence of erythroblastosis fetalis, when the mother and father as well as their infant are Rh positive, is explained. In spite of the existence of these subfactors the present routine method of determining the Rh factor enables the physician to avoid inducing harmful immunizations in perhaps one hundred per cent of the cases provided the precautions mentioned above are exercised when blood is administered to female patients.

SUZANNE SCHAEFER, M. D.†

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†From the Department of Pediatrics, Louisiana State University School of Medicine.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

MEDICAL TRENDS IN WASHINGTON

There was held in Chicago on October 19 and 20 at the headquarters of the A.M.A. a conference of the Council on Medical Service and Public Relations. As a result of this conference the Council, in keeping with resolutions passed, has called another meeting for the purpose of discussing specifically voluntary prepayment medical insurance plans now in operation in the United States with the object of molding some form of national insurance program which could be utilized by all the states.

The Chairman of our Committee on Prepayment Medical Insurance, Dr. O. B. Owens, of Alexandria, is going to represent our State Society at this meeting. Unquestionably he will be able to bring back to our organization and to his committee, valuable information and proposals along the lines as indicated above. This meeting was no doubt called just prior to the meeting of the House of Delegates of the A.M.A. as it was felt that this was an opportune time to prepare recommendations to the House of Delegates for their consideration. We should all be greatly concerned and watch with a great deal of interest what develops at this conference as well as the action taken by the House of Delegates which will certainly indicate the trend of thought on this vital subject.

You have probably noticed in the November 20 issue of the newspapers a statement released by Associated Press giving the five-point program submitted by President Truman as legislation which should be enacted by the present Congress. The first one of these proposals is a compulsory national insurance health program along the lines mentioned in the Wagner Bill, taxing the employer and employee for such service. Unquestionably it is planned to amend the present Social Security Act because immediately after the President presented this program Senators Wagner and Murray introduced a bill in the Senate and Representative Dingell introduced a new bill in the House, containing provisions for the plan as outlined. We do not know the exact form in which this legislation has been presented but we are taking the opportunity of writing to our senators and representatives to obtain a copy of these bills as soon as they are printed. Can the leopard spots be so easily changed? Our various component societies and individual physicians should also secure copies of these bills and familiarize themselves with this proposed legislation. Just as soon as we can get any new data you will be apprised of this through the Journal or otherwise.

You should also be acquainted with the fact that recently the Senate Committee on Education and Labor, through a subcommittee, introduced a completely revised Senate Bill 191, known as the Hill-Burton Hospital Construction Bill. This was acted upon favorably by the committee and is now on the floor of the Senate. The new bill, in comparison with the original bill, is highly favorable to the medical profession. Section 635, the last paragraph of the bill, reads as follows: "Except as otherwise specifically provided, nothing in this title shall be construed as conferring on any Federal officer or employee the right to exercise any supervision or control over the administration, personnel, maintenance, or operation of any hospital with respect to which any funds have been or may be expended under this title." When this report was submitted to the Senate, Senator Murray, Chairman of the Committee, submitted a minority report. He contended that the revised bill removed entirely Federal control and he thought this was objectionable due to the fact that the Federal government would finance the projects mentioned in the bill. He feels too much jurisdiction has been conferred on the state and too much authority in a Federal Hospital Council which is provided for in the bill. On the whole he seems to think that the Wagner-Murray Bill, Senate Bill 1050, would be much more appropriate and contains all the essential needs for hospital expansion.

In view of the recent developments from the White House and the favorable action taken on Senate Bill 191, it will be very interesting to watch the trend of legislative thought in trying to erase the differences which have developed by leaders in Congress.

Another very important bill of serious concern to the medical profession is the Pepper Bill, Senate Bill 1318, which calls for a continuance of the Emergency Maternity and Infant Care program. Your attention is particularly called again to this measure as in our opinion this is one of the most vicious and destructive pieces of legislation that the medical profession has ever encountered. While the original EMIC Program was a wartime directive from the Children's Bureau, it may now become a legislative enactment. This vicious legislation proposes to extend maternity care to every mother and care for every child up to twenty-one years of age. The funds for payment of such service to doctors will be paid by the Federal government through the Children's Bureau. Under such a plan it would not be long before the entire practice of medicine would be supervised, administered and controlled by the Federal government. All doctors who have not read this bill should write their congressmen for a copy and after reviewing send them opinions concerning same.

1946 ANNUAL MEETING

Many of our members over the state are asking about plans for our 1946 annual meeting. The Executive Committee selected the dates of April 29, 30 and May 1 for the meeting on the presumption that a three-day meeting would be held. This was predicated on the possibility of holding a scientific program and whether the hotels in the various localities could accommodate the meeting. Although we have sent inquiries to the various centers where the meeting might possibly be held with the hope that arrangements could be made and an invitation extended for the meeting, we have not yet been honored by such an offer. Those who have responded have found it almost impossible for the hotels in their particular locality to take care of the attending physicians or furnish other facilities required for the meeting. There seems to be a great interest by the doctors of the state for an annual meeting and every effort is being made to make the necessary arrangements. However the prospects are not very encouraging for a three-day meeting including a scientific program and a meeting of the House of Delegates.

DUES FOR 1946

Your attention is called to the fact that dues for 1946 membership in the State Society ($25.00) should be paid in December of this year by all active members. Doctors should communicate at once with the secretaries of their local societies and get their dues in as early as possible. The State Society will still delete the dues for those doctors who are continued in military service. Deletion for doctors discharged from military service will be effective for the current year in which terminal leave expires although they may have been discharged before the first of that year.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of very month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

TOURO INFIRMARY

The regular meeting of the Medical Staff of Touro Infirmary was held on November 14, 1945, at 8 p.m. The Department of Pathology conducted a clinico-pathologic conference with a discussion by Dr. Thomas Findley. Dr. James W. Burks, Jr., spoke on "Coccidioidal Granuloma" and Dr. L. F. Klenke on "Estimation of Surgical Risk of Patients and the Value of Premedication in the Administration of an Anesthetic."

OCHSNER CLINIC

A meeting of the Ochsner Clinic staff members and fellows was held on Friday, November 23 at 8:30 p.m., in the reception room of the Clinic. Dr. Edgar Burns spoke on "Complications of Congenital Anomalies of the Urinary Tract"; Dr. Paul T. DeCamp spoke on "Congenital Cyst of the Lung" which was discussed by Drs. R. V. Platou and Julius L. Wilson. Dr. Robert P. Howell talked on "Enterocoele with Abscess of the Ovary", discussed by Drs. Curtis Tyrone and Conrad Collins.

CHARITY HOSPITAL

A meeting of the Medical Division of the Charity Hospital Visiting Staff was held on Tuesday, November 20 at 8 p.m., in the auditorium of the hospital. The program consisted of the following:

"Histoplasmosis" and "Calcified Intra-abdominal Tumor" by Dr. D. J. Seabury. Dr. Louis Levy spoke on "Bacterial Endocarditis" which was discussed by Dr. Edgar Hull.

SOUTHERN BAPTIST HOSPITAL

A meeting of the Clinical Staff of the Southern Baptist Hospital was held on November 27 at 8 p. m. The program was as follows: "Some Reparative Problems in Military Surgery" by Dr. John F. Oakley; "Handling of Casualties on a Hospital Ship" by Dr. E. Garland Walls; motion picture "Skin Grafting of War Wounds and Observations on Wound Healing" by Dr. M. Converse, discussed by Dr. Waldemar R. Metz; "Death Report" by Dr. Philip M. Tiller, Jr.

HULL HONORED

Dr. Edgar Hull, head of the Department of Medicine at Louisiana State University Medical School, was selected by the graduating class as the physician who has done "most for the welfare of the school and most for the student body during the past school year."

Dr. Lewis E. Jarrett, director of Touro Infirmary, represented Louisiana hospitals at a meeting of the American Hospital Association in Chicago.

GENERAL KIRK RECEIVES DISTINGUISHED SERVICE MEDAL

Major General Norman T. Kirk, Surgeon General of the Army, has been awarded the Distinguished Service Medal by General Brehan Somervell, Commanding General of the Army Service Forces, in recognition of his "outstanding leadership . . . in directing the largest Medical Department in the history of the United States Army."

GRANT FOR THE STUDY OF HYPERTENSION

The Winthrop Chemical Company has made a grant of $2500.00 to the Alton Ochsner Medical Foundation for research in hypertension. The chemical phases of this problem are directed by Otto Schales, D.Sc.

MEDICAL WOMEN'S RALLY SET IN CITY

Dr. Kate S. Zerfoss, Nashville, Tenn., a graduate of the Tulane University School of Medicine, presided at the midyear board meeting of the American Medical Women's Association, December 3-4, at the Jung hotel. Internationally known women physicians throughout the United States were guests of the New Orleans branch.

Attending were Dr. Esther P. Lovejoy, first woman to serve as president of the International Association of Medical Women, who is widely known in the profession for her work in Europe during World War I. Dr. Catherine MacFarlane, noted for her work in cancer prevention research, also attended.

The program included a luncheon at the Jung hotel December 3 followed by a banquet at the Orleans Club; luncheon at Corrine Dunbar's and dinner at International House December 4. Dr. Elizabeth Bass, chairman of the New Orleans branch, was hostess.

ANNOUNCEMENT OF VAN METER PRIZE AWARD

The American Association for the Study of Goiter again offers the Van Meter Prize Award of three hundred dollars and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The Award will be made at the annual meeting of the Association which will be held in Chicago, Illinois in April or May 1946, providing essays of sufficient merit are presented in competition.

INFORMATION WANTED

The State Society has been requested to ask all members released from the armed forces to send the following information to the Directory Department of the American Medical Association, Chicago 10, Illinois:

Full name.

Date military service began and terminated.

Present address of residence and office, or a permanent home address to which mail may be directed.

Whether in practice, retired, or not in practice (on terminal leave, etc.).

If serving a residency in a hospital, indicate the date service is to begin and terminate.

Former permanent address if it is not the same as that indicated as present address.

INFECTIOUS DISEASES IN LOUISIANA

The weekly morbidity report for the State of Louisiana for the week ending October 6 contained a statement of number of venereal diseases for the previous month. There were reported in this period 2040 cases of gonorrhea, 1508 of syphilis, 30 of lymphopathia venereum, 26 of chancroid, and 24 of granuloma inguinale. Report for this same week included the following diseases in numbers greater than ten: Unclassified pneumonia 125, cancer 124, pulmonary tuberculosis 52, septic sore throat 36, rheumatic fever 32, pneumococcic pneumonia 1, dengue 24, bacillary dysentery 21, typhus fever 14, and malaria 13. Three cases of meningococcus meningitis were reported and six cases of poliomyelitis, scattered throughout the state. There were also reported two cases of undulant fever; one from East Baton Rouge Parish and one from Pointe Coupee. Of the 13 cases of malaria reported ten were contracted within Continental U. S. and three outside. For the week ending October 13 there were 30 cases of typhus fever reported, 18 of septic sore throat, 16 of pulmonary tuberculosis and 10 of scarlet fever. There was only one case of meningococcus meningitis and two cases of undulant fever reported this week; the former occurring in Orleans Parish and the latter in East Baton Rouge and East Carroll Parishes. Of the six cases of malaria reported, four were contracted outside of Continental U. S. and place of contraction was not stated for two. The report for October 20 showed a considerable increase over the previous week in the number of pulmonary tuberculosis cases, there being 43 reported. Also reported this week were 24 cases of mumps and 24 of septic sore throat, 16 of scarlet fever, 15 of diphtheria, 12 of hookworm, and 10 each of poliomyelitis and unclassified pneumonia. The poliomyelitis cases occurred in Caddo, De Soto, Orleans, Ouachita, Sabine, St. Mary and Tensas Parishes; Caddo having four and the other parishes one each. Two cases of malaria were contracted within Continental U. S., two outside and place of contraction of one was not stated. For the week which closed October 27, 42 cases of malaria were reported followed by 35 of septic sore throat, 34 of scarlet fever, 32 of diphtheria, 16 of pulmonary tuberculosis, 12 of typhus fever, and 10 each of hookworm and influenza. Rapides and Vermilion Parishes each reported one case of meningococcus meningitis, East Baton Rouge one of undulant fever, and poliomyelitis was reported by four parishes; Allen one, Caddo five, Orleans one and Sabine two. Of the 42 cases of malaria reported this week 28 were contracted within Continental U. S. and 14 outside of Continental U. S.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported that during the week ending October 13 there were 123 deaths listed in the City of New Orleans of which 77 were white and 46 were colored, including a total of 10 under one year of age; 6 of whom were white. There was an increase of 34 deaths reported for the week which closed October 20. In the total of 157 there were 96 white and 61 colored. Also, during that week there occurred 19 deaths in children under one year of age; 10 white and 9 colored. The report of October 27 showed the number of deaths to be 76 white and 51 colored totaling 127. In this number only 1 was a white child under one year of age and 7 were colored. For the week closing November 3, 152 deathes occurred in this city; 97 were white and 55 non-white, including 13 infants which were mostly colored.

THEODORE JOHN DIMITRY

Dr. Theodore John Dimitry, an active member of the State Society for many years, died in New Orleans on October 27. Dr. Dimitry practiced in New Orleans, specializing in ophthalmology, since his graduation from Tulane in 1901. He was chief of the Department of Ophthalmology of Louisiana State University and chief of the eye clinc at Charity Hospital.

WOMAN'S AUXILIARY

Following are the officers of the Woman's Auxiliary to the Louisiana State Medical Society for 1945-46:

Officers

President—Mrs. Paul G. Lacroix, 3132 State Street Drive, New Orleans.

President-elect—Mrs. Arthur Long, 1367 Steele Drive, Baton Rouge.

First Vice-President—Mrs. Carroll Gelbke, 44 Willow Drive, Gretna.

Second Vice-President—Mrs. O. B. Owens, 1931 Military Highway, Pineville.

Third Vice-President—Mrs. B. C. Garrett, 4700 Fairfield Ave., Shreveport.

Fourth Vice-President—Mrs. A. G. McHenry, 1810 Riverside Drive, Monroe.

Treasurer—Mrs. Richard Vincent, 1441 Eleonore Street, New Orleans.

Recording Secretary—Mrs. Frank Jones, 810 Park Blvd., Baton Rouge.

Corresponding Secretary—Mrs. Willard Wirth, 402 Vincent Avenue, New Orleans.

Chairmen of Standing Committees

Archives—Mrs. Ansel Caine, 5301 St. Charles Avenue, New Orleans.

Bulletin—Mrs. Earl Clayton, Norco.

Cancer Control—Mrs. Herman B. Gessner, 119 Audubon Blvd., New Orleans.

Doctor's Day—Mrs. Geo. J. Taquino, 18 Fontainbleau Drive, New Orleans.

Finance—Mrs. Donovan C. Browne, 4920 St. Charles Ave., New Orleans.

Historian—Mrs. John S. Dunn, 8410 Pontchartrain Blvd., New Orleans.

Hygeia—Mrs. Leo. J. Kerne, Thibodaux.

Indigent Widow's Fund—Mrs. Aynaud Hebert, 2013 Napoleon Ave., New Orleans.

Legislation—Mrs. C. Grenes Cole, 4938 St. Charles Ave., New Orleans.

Organization—Mrs. Arthur Long, 1367 Steele Drive, Baton Rouge.

Parliamentarian—Mrs. A. A. Herold 1116 Louisiana Ave., Shreveport.

Press and ublicity—Mrs. Roy Carl Young, Covington.

Printing—Mrs. Daniel J. Murphy, 127 South Solomon Street, New Orleans.

Program—Mrs. J. E. Heard, 512 McCormick Street, Shreveport.

Public Relations—Mrs. Rhodes Spedale, 701 Eden Street, Plaquemine.

Red Cross—Mrs. William Kohlmann, 1330 Elenore Street, New Orleans.

Revision of By-Laws—Mrs. J. Kelly Stone, 72 Fontainbleau Drive, New Orleans.

War Participation—Mrs. Clarence Erickson, 423 Herndon Ave., Shreveport.

Councilors

First District—Mrs. Jules Myron Davidson, 100 Fontainbleau Drive, New Orleans.

Second District—Mrs. Roy B. Harrison 2327 Napoleon Ave., New Orleans.

Third District—Mrs. Jules E. Dupuy, New Iberia.

Fourth District—Mrs. William J. Sandidge, 522 Stephenson Street, Shreveport.

Fifth District—Mrs. DeWitt T. Milam, 1704 Island Drive, Monroe.

Sixth District—Mrs. Marquis C. Wiginton, Hammond.

Seventh District—Mrs. Olin Moss, 2011 Shell Beach Drive, Lake Charles.

Eighth District—Mrs. Hiram O. Barker, Horseshoe Drive, Alexandria.

Advisory Board

Dr. W. R. Metz, Chairman, New Orleans; Dr. King Rand, Alexandria; Dr. Charles Spedale, Plaquemine.

MR. C. P. LITER ADDRESSES MEET

The Woman's auxiliary of the East Baton Rouge Parish Medical society met at the home of Mrs. M. L. Levy November 9. The social hour was followed with a business meeting, at which Mrs. J. O. Hoth presided in the absence of Mrs. Roy Rabelais.

Mr. C. P. Liter, the guest speaker, was introduced by Mrs. Edward J. Cailleteau. He addressed the group as a lay representative of the Blue Cross Hospital plan and explained the plan to the group. There are 13,600 people in Baton Rouge covered by the plan, 6000 of which are subscribers and 7600 dependents, he said. Hospitalization on the Blue Cross plan could be provided for 860,000 people for what it costs to operate the New Orleans Charity hospital, he stated, mentioning that 18,000,000 people are covered in the United States.

Co-hostesses were Mrs. John L. Beven, Mrs. Oswald Cosby, Mrs. F. U. Darby, Mrs. Wiley A. Dial, Mrs. J. P. Griffon.

Mrs. Charles Allen, Jr., Mrs. Felix Boizelle, Mrs. William Cook, Mrs. James R. Godfrey, Mrs. Robert Hansen, Mrs. Henry Hatcher, Mrs. Frank Jones, Mrs. Marian Landess, Mrs. Arthur D. Long, Mrs. Cecil Lorio, Mrs. Lionel Lorio, Mrs. C. S. McConnell, Mrs. E. E. Merse, Mrs. McHugh Simmons, Mrs. Richard Stephenson, Mrs. J. Eugene Toups, Mrs. W. A. Vennard, Mrs. Charles H. Voss and Mrs. M. A. Walker.

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TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR OF MEETINGS

December 17.	Hotel Dieu Staff, 8 p. m.
December 18.	Charity Hospital Medical Staff, 8 p. m.
December 19.	The Orleans Society of X-Ray Technicians, 7:30 p. m. Charity Hospital Surgical Staff, 8 p. m. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
December 20.	Clinico-pathologic Conference, Touro Infirmary, 12 noon. French Hospital Staff, 8 p. m.
December 21.	I. C. R. R. Hospital Staff, 12:30 p. m.
December 27.	DePaul Sanitarium Staff, 8 p. m.
December 28.	L. S. U. Faculty Club, 8 p. m. New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.
January 2.	Mercy Hospital Staff, 8 p. m. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
January 3.	Clinico-pathologic Conference, Touro Infirmary, 12 noon.
January 4.	Medical Advisory Committee, Charity Hospital Visiting Staff, 11 a. m.
January 7.	Board of Directors, Orleans Parish Medical Society, 8 p. m.
January 8.	Eye, Ear, Nose and Throat Staff, 8 p. m.
January 9.	Woman's Auxiliary, Orleans Club, 3 p. m. Touro Infirmary Staff, 8 p. m.
January 14.	Installation Meeting, Orleans Parish Medical Society, Jung Hotel, 7:30 p. m.

NEWS ITEMS

The November scientific meeting, which was held on the 12th, was as follows. How the Low Mortality Rate in Battle Casualties Was Accomplished in the Third United States Army, by Dr. Charles B. Odom. Penetrating Abdominal Injuries, by Dr. John F. Oakley. Medical and Surgical Experiences in Prisoner of War Camps in the Philippines and Japan, by Lt. Col. Edwin S. Kagy, M. C., U. S. A.

Dr. Eugene H. Countiss was recently appointed by the president, in accordance with the by-laws of the Society, as librarian of the Society to fill the vacancy created by Dr. John R. Schenken's removal o Omaha.

Dr. Wm. B. Clark has returned from Yepocapa, Guatemala, where he spent six weeks instituting a research project in the cause of blindness in patients infected with onchocerciasis in Guatemala. This project is sponsored jointly by the Caribbean sector of the Pan American Sanitary Bureau and the Department of Health of Guatemala. Dr. Clark will return to Guatemala in January to close out or continue the project, which is being continued in his absence, as the results of the investigation ustify.

MILITARY SERVICE

The following physicians have been released from active military service, and have resumed practice:

Robert E. Rougelot, 820 Maison Blanche Bldg.; Anthony J. Italiano, 725 Audubon Bldg.; L. S. Charbonnet, Jr., 706 Maison Blanche Bldg.; Edwin R. Guidry, 1343 Annunciation St.; W. Robyn Hardy, 637 Canal Bldg.; John S. Herring, 1521 Delachaise St.; Charles B. Odom, 1521 Delachaise St.; Cosmo J. Tardo, 725 Audubon Bldg.; J. O. Weilbaecher, Jr., 626 Canal Bldg.; Joseph A. Sabatier, Jr., 810 Hibernia Bldg.; Malcolm P. Schwarzenbach, 226 Verret St.; Pascal L. Danna, 946 Canal Bldg.; Morris Shushan, 1113 Pere Marquette Bldg.; Zachary J. Romeo, James S. Webb, 1207 Richards Bldg.; Harry Meyer, 301 Medical Arts Bldg.; Joseph D. Landry; Warren L. Rosen, 502 Medical Arts Bldg.; Clarence A. Bishop and Richard E. Selser, Charity Hospital; Horace L. Wolf, Touro Infirmary; Conrad G. Collins and Mims Gage, Tulane Medical School.

Dr. Leon J. Menville was appointed to the advisory committee for the celebration of the 50th anniversary of the discovery of x-rays. November 5-10 was set aside for the observance of this anniversary; and the committee made plans for a nationwide educational program to acquaint the public with the development of the x-ray.

Dr. John H. Musser was recently elected district vice-president, representing the Gulf states, of the Association of Pennsylvania Clubs, University of Pennsylvania alumni.

Dr. George W. McCoy recently assisted the Chicago Board of Health in its scientific research work on poliomyelitis. Following this he attended the meeting of the National Foundation of Infantile Paralysis held in New York City.

Drs. Emil Palik and John R. Schenken recently completed a paper entitled "Disseminated Granuloma Venereum," which is to be published soon in the American Journal of Clinical Pathology. This paper was presented by Dr. Schenken at the annual meeting of the American Society of Clinical Pathology.

Dr. Alton Ochsner attended a meeting of the American Cancer Society recently held in New York.

Dr. Neal Owens was recently elected first vice-president of the American Society of Plastic and Reconstructive Surgery.

Dr. B. B. Weinstein recently addressed the Obstetrical and Gynecological Society of Mexico City. Dr. Weinstein also visited the Military school of medicine and the University of Mexico school of medicine while in Mexico City.

Dr. Julius Lane Wilson spoke on the life of Dr. Trudeau at the 97th anniversary meeting of the Trudeau Memorial Guild.

Dr. David R. Womack and Dr. Jack E. Strange were recently elected to office in the Ernie Pyle Post of the American Legion. Dr. Womack was elected commander and Dr. Strange was elected chaplain.

REMOVALS

Dr. Joseph N. Ané from 1201 Maison Blanche Bldg., to 604 Pere Marquette Bldg.

Dr. Wm. K. Gauthier from 637 Canal Bldg., to 2049 Metairie Road.

Dr. Gretchen Squires has removed to Florida; she assumed her new position as director of the Pathology and Clinical Laboratory of the Pensacola Hospital, Pensacola, on October 20. Dr. Squires will also maintain a full time private practice in clinical pathology.

Dr. John R. Schenken has removed to Nebraska; he is director of Laboratories at the Methodist Hospital, Omaha.

At the regular meeting of the Society held

Monday, November 12, 1945, the following nominations for Officers of the Orleans Parish Medical Society for 1945, and Delegates to the Louisiana State Medical Society for 1946-1947, were handed to the Secretary in accordance with the By-Laws:

President-Elect—Dr. H. Ashton Thomas
Endorsed by: Drs. Wm. H. Roeling and Frederick F. Boyce.

First Vice-President—Dr. Edmund M. Connely
Endorsed by: Drs. E. A. Ficklen, Edwin H. Lawson and Chas. Cox.

Second Vice-President—Dr. C. J. Brown
Endorsed by: Drs. Frank Chetta and H. Ashton Thomas.

Third Vice-President—Dr. Edgar Hull
Endorsed by: Drs. C. Grenes Cole and L. A. Fortier.

Secretary—Dr. Max M. Green
Endorsed by: Drs. C. J. Brown and E. L. Leckert.

Treasurer—Dr. Boni J. DeLaureal
Endorsed by: Drs. Randolph Lyons, M. D. Steiner and Walter Levy.

Librarian—Dr. Eugene H. Countiss
Endorsed by: Drs. Paul B. Lastrapes and Wilkes A. Knolle.

Additional Members

Board of Directors—Dr. E. L. Leckert
Endorsed by: Drs. Roy B. Harrison, J. E. Brierre and O. J. Burger.

Dr. J. O. Weilbaecher, Jr.
Endorsed by: Drs. O. C. Cassegrain and George J. Taquino.

DELEGATES TO THE LOUISIANA STATE MEDICAL SOCIETY

Dr. H. B. Alsobrook—Endorsed by: Drs. M. P. Boebinger and John T. Sanders.

Dr. Geo. C. Battalora—Endorsed by: Drs. Louis A. Monte and Wm. M. Roeling.

Dr. C. J. Brown—Endorsed by: Drs. Edwin L. Zander and Max M. Green.

Dr. Donovan C. Browne—Endorsed by: Drs. Louis Leggio and Max M. Greenberg.

Dr. W. R. Buffington—Endorsed by: Drs. Chas. Cox and John T. Sanders.

Dr. Frank Chetta—Endorsed by: Drs. C. J. Brown and L. S. Charbonnet, Jr.

Dr. Wm. B. Clark—Endorsed by: Drs. Paul B. Lastrapes and Wilkes A. Knolle.

Dr. Lucien A. Fortier—Endorsed by: Drs. Philip A. Boudreaux and J. C. Menendez.

Dr. Aynaud F. Hebert—Endorsed by: Drs. Louis Leggio and Max M. Green.

Dr. Sam Hobson—Endorsed by Drs. H. R. Unsworth and M. P. Boebinger.

Dr. Theo F. Kirn—Endorsed by: Drs. P. A. Phillips and John J. Irwin.

Dr. Edwin H. Lawson—Endorsed by: Drs. H. R. Unsworth and Chas. Cox.

Dr. E. L. Leckert—Endorsed by: Drs. Leon Menville, W. H. Roeling and L. A. Monte.

Dr. Jos. P. Palermo—Endorsed by: Drs. L. A. Fortier, J. M. Ciaravella and Spencer McNair.

Dr. E. J. Richard—Endorsed by: Drs. N. K. Edrington, A. E. Fossier and Spencer McNair.

Dr. Wm. H. Roeling—Endorsed by: Drs. J. E. Brierre and Percy A. Phillips.

BOOK REVIEWS

Pulmonary Edema and Inflammation: An Analysis of Processes Involved in the Formation and Removal of Pulmonary Transudates and Exudates, by Cecil K. Drinker, M. D., D. Sc., Cambridge, Mass. Harvard University Press, 1945, pp. 106. Price, $2.50.

This monograph consists of the Nathalie Gray Bernard Lectures given by Dr. Drinker at the Bowman Gray School of Medicine in December 1944 with an added chapter on artificial respiration. By the use of a new experimental technic to measure the lymph drainage from the lungs and a drug, thiourea, which causes pulmonary edema and pleural transudates, a considerable contribution has been made to our knowledge of the formation and disposal of fluid in the lungs. In the light of this new experimental work the author has written both readably and profoundly about the relations between lung structure and edema, the physiologic factors involved and the preventive and therapeutic measures available. There is little or nothing about inflammation as distinct from edema. The fundamental importance of anoxia in setting up a vicious cycle of pulmonary edema is clearly demonstrated. The section on artificial respiration is valuable because of the author's association with the development of the respirator bearing his brother's name and because of his own long experience with the comparative study of methods of resuscitation. This small book is stimulating reading. It should be of value to internists, thoracic and industrial surgeons, anesthetists and all others who are interested in pulmonary and cardiac disease. There are both a carefully selected bibliography and an index.

Julius L. Wilson, M. D.

The Physiology of the Newborn Infant: By Clement A. Smith, M. D. Springfield, Illinois, Charles C. Thomas, 1945. Pp. 312. Price, $5.50.

This eminently useful handbook of information by Dr. C. A. Smith, Professor of Pediatrics at Wayne University College of Medicine accomplishes very nicely the purpose of summarizing pertinent fundamental knowledge of physiologic peculiarities and characteristics of the fetus and newborn. The extensive bibliography following each section is well chosen; omission of some recent publications from an otherwise rather complete list seems unfortunate but is probably accounted for by wartime delays in publication. There are thirteen chapters, each sensibly divided into sections, ending always with a clinical smmary which crystallizes information applicable to situations commonly encountered in practice. Particularly outstanding are the chapters dealing with respiration and circulation, relating the application of cumulative research in these fields to rational methods of resuscitation.

The text is very well organized and follows an unusually excellent and readable pattern. It is well supplied with suitable charts, tables, and pictures and can be heartily recommended as a valuable handy source of information for all physicians having responsibility for the care of premature and normal newborn infants.

R. V. Platou, M. D.

Men Under Stress: By Roy L. Grinker, Lt. Col. M. C., and John P. Spiegel, Major M. C., Army Air Forces. Philadelphia, Blakiston, 1945. Pp. 484. Price, $6.00.

With the exception of those who are too somber or fact-bound most persons will find in this excellent book a tremendous lot of valuable neuropsychiatric information to single it out for especial attention.

Under sufficient stress any individual may exhibit failure of adaption evidenced by neurotic symptoms. War, which of necessity is largely destructive, fortunately has some scientific and humane by-products. It stimulates intensive studies of man's complex somatic and emotional processes and teaches lessons which have useful applications in civilian life regarding the methods by which men adapt themselves to all forms of stress either in war or in peace. Therefore, the problem resolves itseld not in the detection of normality or its lack but in a study of the psychological methods of dealing with the harsh realities of human existence.

Men Under Stress tells what the men are like before they go into battle, thereby giving a cross-section of American youth. It describes combat fear and the many other kinds of neurotic disturbances—cases of changed personality, men who are "ghosted by lost comrades," men who have become hostile and aggressive. Sixty-five complete case histories are reported in detail. In this treatise are explained the various corrective treatments, including methods in which drugs have been used in psychiatric treatment of casualties of this war with unusual success and expediency.

Doctors Grinker and Spiegel have taken infinite pains to produce an astonishingly remarkable work which your reviewer unhesitatingly designates as a medical classic.

C. P. May, M. D.

Personal Mental Hygiene: By Don Thomas Verner Moore, M. D., O. S. B., Ph. D. New York, Grune & Stratton, 1944. Pp. 331. Price, $4.00.

This book is unusual in that it combines orthodox psychiatry and religious truths. Such a combination will have to take place sooner or later and it is much needed already. To deal effectively with the personality such concepts as anger, hatred, love, charity, greed and pride must be used and used in such a way that they carry their long accepted connotations. New knowlege only supplements old truths. New psychiatry can only supplement established moral values, at least in the wisest application of psychiatry.

This is by no means a textbook of psychiatry and such important subjects as anxiety are treated very superficially. Psychopathic personality and schizophrenia are handled effectively by using the personalities of Goldsmith and Swinburne as illustrations. The use of famous people as examples of personality problems is a valuable part of this book. The emphasis on a healthy family circle is well taken in this book. This subject is of the greatest importance since serious functional psychoses rarely occur in harmonious homes. The author's estimation of the causes of the distintegration of family life must certainly be difficult for modern Americans to accept, but I believe that psychiatric experience will bear him out. The book is full of references to great religious teachers of the past as well as to psychiatric and non-psychiatric literature. He also makes use of his knowledge of neuro-physiology and pharmacology in describing the handling of various cases, which he describes in sufficient detail to make the book well balanced.

Walker Thompson, M. D.

The Bacterial Cell: By René J. Dubos, with an Addendum by C. F. Robinow. Cambridge, Mass., Harvard University Press, 1945. Pp. 460. Price, $5.00.

Dr. Dubos has here developed the substance of his eight Lowell Lectures, delivered in Boston in 1944, into a comprehensive and fascinating account of the newer knowledge concerning the physical and biochemical structures of bacteria, as well as their genetic and physiologic behavior. The subject has been treated with special emphasis on its relation to bacterial virulence, immunity and chemotherapy, so that it is a valuable reference for the person interested in medical bacteriology or the larger problems of infectious disease, whether he be investigator, teacher or student. The treatment of the material is thorough and abundantly documented by references, the splendid bibliography being one of the most attractive features of the book. At the same time this is much more than a mere dull compendium, as Dr. Dubos has analyzed the available data in terms of what is yet unknown and frequently throws forth challenging ideas or questions which should serve as stimulation and guide to future research.

Dr. Robinow's chapter on nuclear apparatus and cell structure of rod-shaped bacteria is also noteworthy since it presents overwhelmingly convincing evidence, much of it photographic, of the existence and activity of nuclear material arranged in discrete units such as chromosomes and behaving like similar entities in other organisms. Many bacteriologists have been inclined to regard with considerable reserve, if not downright skepticism, the earlier claims for the demonstration of nuclear structures in bacteria; to these persons, Dr. Robinow's reproductions should be an eye- and mind-opener.

It is not intended to detract from the commendation of this book when one notes the existence of occasional minor errors, chiefly typographical, which are no doubt due to the difficulties of preparing such a work for publication under the exigencies of war-time. This reviewer believes that *The Bacterial Cell* should and will have not only wide distribution but also a profound influence on bacteriological thinking.

Morris F. Shaffer, Ph. D.

Preventive Medicine: By Mark F. Boyd, M. D., C. P. H., 7th ed. rev. Philadelphia and London, W. B. Saunders Company, 1945. Illus., pp. 591. Price, $5.50.

This seventh edition of a widely accepted text in the fields of preventive medicine and public health preserves the format of the previous editions. While the same thirty-seven chapters occur, many of them with headings identical with those of the sixth edition, many have been largely rewritten to present the newer information on the subjects concerned. New plates, tables and charts are used, while some of the older ones which have trade-marked the book have been omitted. The bibliography is up to date and is more inclusive than previous ones. No typographic errors have been detected.

In short this is an adequate revision of a good text in preventive medicine in the moderate price range.

Rdlph H. Heeren, M. D.

Virus as Organism: By Frank M. Burnet, M. D., F. R. S. Cambridge, Mass., Harvard University Press, 1945. Pp. 134. Price, $2.00.

This is one of the well worth while publications of the Edward K. Dunham Lectures, put out by the Harvard University Press. Burnet, of Australia, needs no introduction as an authority on the viruses. His studies of viruses and the viral diseases are so well known that the author's name and his accomplishments are well known to the medical profession.

In this monograph Burnet discusses the virus diseases from a consistently biologic angle. He states that it is impossible not to look upon the viruses as living organisms which will reproduce and survive changes in environment as do other organisms. Illustrative of the fact that virus diseases breed true to type is the example of mumps which was discovered by Hippocrates 2500 years ago and which has been transmitted from individual to individual for twenty-five centuries without change in so far as the type of disease that it produces is concerned.

The first three chapters of the monograph have to do with the general studies of viruses that have been made in the past few years. Parenthetically it might be remarked that it has only been in the last 15 years that the medical profession has come to appreciate the importance of the viruses as disease producers and to study intensively their characteristics both in the laboratory and in man. The succeeding chapters each deal with one of the common and important viral disorders—herpes simplex, poliomyelitis, psittacosis, smallpox, yellow fever and influenza. There then follows a short chapter in which the author draws some conclusions from the material he has presented in the preceding chapters.

This book is intended primarily not for the bacteriologist, the virologist and the laboratory scientist, but rather for the practitioner of medicine. It summarizes reasonably succinctly the information that is available about the viruses; it discusses the more important viral diseases and more particularly their causative virus and the evolutionary and ecological aspects of the specific virus responsible for the disease. The book is truly most fascinating. It is written with restraint and good sense; it presents material with which the average doctor is unacquainted and about which he should know more than he probably does.

J. H. Musser, M. D.

The Fundamentals of Electrociographic Interpretation: By J. Bailey Carter, M. D., F. A. C. P. Springfield, Ill., Chas. C. Thomas, 1945. Pp. 406, illus. Price, $5.00.

In the second edition of this book there has been some rearrangement of the subject matter and some additions made. The bibliography follows each chapter instead of being at the end of the book. Most of the reproductions are good. The description of some are not complete. The reviewer feels that all the abnormalities in the electrocardiogram should be pointed out as well as the ones under discussion. There would also be a difference of opinion in the interpretation of some of the curves, i. e. Figure 46 page 91 is said to show myocardial damage evidenced by slurring of QRS 1—slurring and notching of QRS 3. One may have good grounds for claiming that this curve is within normal limits. The slurring of QRS 1 is very slight and QRS 3 has the lowest amplitude of the three leads. A little fuller and more up-to-date description of the Wolff Parkinson and White syndrone would be of help to the beginner.

There are several curves showing typical left and right bundle branch block. He labels them simply bundle branch block. The reviewer feels that the type of curve in Figue 99, page 148, should be called left bundle branch block. The one shown in Figures 106 & 107 on Page 152 should be labeled right bundle branch block. Chest leads in these types of curves when they are not typical help to place them under their proper heading.

The author with some justification seems to think that the interest in the chest leads has detracted from the proper study and appreciation and importance of the llmb leads. However, it must be remembered that in some cases the chest leads will reveal the presence of myocardial damage while the limb leads are equivocal. The author relies principally on what he terms simplified technic in the recording of chest leads — described as follows. "After the three standard leads are recorded, the left arm electrode is removed and applied to the chest in the fifth interspace in the midclavicular line; lead wire connections remaining undisturbed. The electrode is held in place by the fingers of the patient. Lead I. & III. on the control board are selected in turn. These are called Lead IV. & Lead V. or Lead CR 4 and inverted CF4". The reviewer prefers to place the chest electrodes in the C1—C2—C3—C4—C5 and C6 position using the so-called central terminal or the left leg as the distant electrode. This will not be necessary of course in all cases but where the chest leads are considered necessary it is best to place the electrode on more than one point. This seems to be in accord with most of the writers on this subject. It is important to avoid as many sources of confusion as possible. The author feels that serial curves are of much greater assistance than the chest leads. Some might think that this is a little over-emphasizing; however, there is no question about the great importance of serial curves.

Chapter 22 Concepts of Coronary Disease in the space of ten pages is brought out the principal points of the accepted view of cardiologists of today.

Chapters 35 and 36 — Graphic Findings in Various Diseases and Clinical Value of Electrocardiography contains much that will be helpful to the beginner.

In the case histories the electrocardiogram is shown and described under each case which is an improvement over the first edition.

The beginner will find much in this book that will help him.

J. M. Bamber, M. D.

Neuro-Ophthalmology: By Donald J. Lyle, B. S., M. D., F. A. C. S. Springfield, Ill., Chas. C. Thomas Co., 1945. Pp. 395. Price $10.50.

Ophthalmology is indebted to the author for an outstanding contribution. In four hundred pages the subject is covered in a practical and reasonably complete manner. Difficult and complex concepts are expressed in words of almost one syllable.

Nineteen chapters, a bibliography of almost eighteen hundred references, two hundred and thirty-four illustrations, a comprehensive table of contents and an index make up this interesting, instructive and timely volume. The section on Intracerebral and Orbital Neoplasms is of special interest because accurate localization is usually very difficult for the Ophthalmologist. Ocular reflexes and associated structures of the mid-brain is another subject which is presented in an exceptionally understandable manner. It is made as simple as such a complex subject can be made. The eye manifestations of head injuries will be of special interest to ophthalmologists and others especially in the military service. Although presented in but fifteen pages, the fundamentals are given and their applications illustrated with exceptional clarity. The illustrations are ample in number and excellent in quality. They really illustrate.

No ophthalmologist will make a mistake in reading and re-reading this outstanding volume.

CHAS. A. BAHN, M. D.

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New Orleans Medical
and
Surgical Journal

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CARCINOMA OF THE CERVIX
AN ATTEMPTED FOLLOW-UP STUDY OF 500 CASES. I. ANALYSIS OF MATERIAL*

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and
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NEW ORLEANS

This series of papers has a twofold purpose: (1) to report the end-results and certain other statistical data derived from an attempted follow-up study of 500 women with carcinoma of the cervix treated at Charity Hospital of Louisiana at New Orleans over an approximately five and one-half year period ending July 1, 1937, and (2) to discuss the implications of these data and the conclusions to be drawn from them.

The material is entirely unselective except that pathologic proof of the disease was required in every instance. It is also consecutive except for the omission of an occasional case which could not be located, for one reason or another, in the hospital files. The omission of these few cases makes no difference. The aim of the study was not to prove anything about the incidence of the disease in this particular institution, or anything about the hospital death rate, but merely to determine, as far as possible, what happened to 500 women treated seven years or more before this study was undertaken, and, more important, why it happened.

It might be well to emphasize in the beginning that the number of proved cases of carcinoma of the cervix treated in the hospital during the period of the investigation represents only a portion, and by no means the major portion, of the total number of cases treated during these years. In a few of the unproved cases the omission of biopsy was probably a frank diagnostic error, which had serious consequences. In the great majority, however, it was probably not necessary for diagnosis, and in many instances it would merely have been meddlesome interference. For one thing, the loss of even a small amount of blood by an already anemic and cachectic patient is always undesirable. For another, simple humanity demands that an incurably ill woman, for whom nothing can be done, should not be disturbed merely to secure scientific proof of a disease which is entirely obvious from the clinical findings and course.

PLAN OF PROCEDURE

The plan of procedure is worth outlining in some detail, as illustrating the difficulties of following-up "cold" material of this sort:

1. Following the selection of 500 consecutive cases of carcinoma of the cervix on the basis of pathologic proof of disease, it was necessary to search the yearly admission cards of the hospital for each name from the date of the patient's first admission until the current year unless death occurred earlier. This search was required because during the period covered by the investigation the unit system of admission was not in effect at Charity Hospital (it was instituted July 1, 1937) and each admission of each patient was an independent

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*These studies were financed by a grant from the Helis Research Institute, Hotel Dieu, New Orleans.

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and unrelated record. Inevitable errors in the spelling of names, errors due to carelessness, failure to inquire concerning previous admissions, or to make entries concerning them on the charts, and the habit of negro patients, in particular, of giving different names on different admissions made the identification of the complete file for each patient anything but an easy task.

2. The Radiotherapeutic Department and the Social Service Department of the hospital kindly permitted a search of their files, and the New Orleans Department of Public Welfare searched its own files for local patients. Some end-results, chiefly fatal, were thus found, and additional avenues of investigation were opened up.

3. Letters were next sent out to the latest addresses of all patients not located by the methods already described. Letters returned as undeliverable and letters to which no replies were received were sent out successively to other addresses given by the patients and to the persons whom they had named as references. An incidental recommendation from this study would be that every patient admitted to a public hospital should be required to supply at least one reference at an address *other than his or her own*. All of the patients in this group were on the economic level on which frequent changes of address are the rule. Patients on this level, furthermore, who move frequently make little lasting impression on the communities in which they live; this was particularly true of the negro women who made up considerably more than half of the 500 patients studied. In some instances as many as a dozen inquiries about the same patient produced no results.

4. If letters to a patient at all stated addresses and to her references at all stated addresses produced no results, inquiries were addressed to the physician who had referred her to the hospital. All patients, of course, had not been thus referred.

For several reasons the results of this line of investigation were particularly poor. Many letters were not answered at all. In many instances, particularly in women referred from the country, the patients had been seen for the first and only time when they were sent into the hospital, and the physicians reported that their files did not contain the names. A number of physicians had died and their successors knew nothing of the patients. A number of the physicians had entered the service and their office files were not available for examination. In this connection, special mention should be made of the lieutenant commander who, literally on the brink of the Pacific Ocean, took time for a courteous reply, which included full information about the patient in question. Finally, in some instances, all knowledge of the patient was denied, though later investigations of the public records showed that some of the physicians in this group had signed the death certificates of the patients being sought.

5. When all other methods of inquiry had failed, the vital statistics of the State of Louisiana and the City of New Orleans were investigated, the search for each patient beginning with the date on which she was last discharged from the hospital and continuing until the current year unless her death were located earlier. The search of the City records was complete. The search of the State records, although extensive, was not exhaustive because indexing of the material for certain years was in progress and all the files were not available for use.

ANALYSIS OF MATERIAL

END-RESULTS

Of the 500 patients who make up this series, 358 are known to have died within periods varying from eight hours to nine years after they were first seen, and 39 are known to be alive for periods varying from seven to 12 years after the initial treatment. Of the patients known to be dead, one who had survived seven years without evidence of recurrence died of a heart attack immediately after a rather ill-advised cystoscopy, and a second, who had survived five years without recurrence, died of lymphatic leukemia. They can fairly be considered as part of the known salvage (the term being preferred to cure), which thus becomes 41 cases.

The followed-up cases number 397, 79.4

per cent of the total, which, in view of the lapse of time between treatment and the beginning of the attempted follow-up, is a remarkably good proportion to be traced. Of the 103 patients not followed-up, although from the statistical standpoint all of them, in the absence of information to the contrary, must be regarded as dead, it may be said that five may possibly be alive and 49 undoubtedly are dead. The estimate is based on their status when they were last seen and is, of course, entirely speculative.

RACE AND AGE

One hundred eighty-three of the 500 patients were white and 317 were negro. During the period in question the ratio of hospital admissions was, for all practical purposes, 55 white to 45 negro. There are, however, certain possible explanations for the negro predominance in the series. One is that the gynecologic admissions at Charity Hospital are always higher on the negro than on the white service. Another is that during the major portion of the period covered by the investigation negro women could be hospitalized, in addition to the New Orleans Charity Hospital, only at the Shreveport Charity Hospital, or, if their finances permitted, at one private hospital in New Orleans of limited bed capacity. No conclusions are warranted from the racial distribution of cases in this series except the obvious one that negro women frequently have carcinoma of the cervix. How many negro women die of the disease in their homes, without ever being hospitalized or without a correct diagnosis of their condition it is not possible to say.

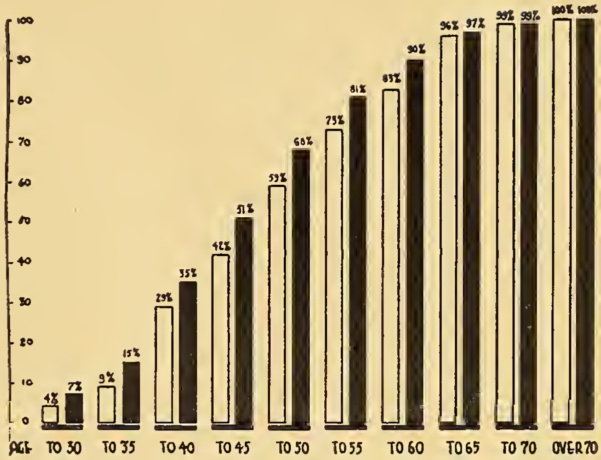

Fig. 1. Proportionate cumulative age incidence in 183 white and 317 negro cases of carcinoma of the cervix.

The age range in the 500 cases was from 20 to 78 years of age and approximately two-thirds (325) of the patients were between 35 and 55 years of age. The impression held by most Southern gynecologists that negro women develop cervical malignancy at an earlier age than white women is further borne out by this study (fig. 1). The youngest patient in the whole series, as a matter of fact, was a negro woman, first seen at the age of 20, who has survived 11 years in spite of serious rheumatic heart disease and totally inadequate therapy, consisting only of cauterization of the cervix and the application of 1,300 mg. hrs. of radium.

PARITY AND MENOPAUSE

The proportion of parous women in this series is somewhat higher than in many reported series, though in all series parous women greatly predominate. Only four patients were unmarried, and only 25 were absolutely sterile. Fourteen had had only abortions, but the remaining 457 had borne from one to 17 children each, and 78 had had one or more abortions. One patient, 29 years of age, had had eight children and one abortion, and another woman, 30 years of age, had borne only one full-term child but had had nine criminal abortions.

Exclusive of the 29 patients with malignancy of the cervical stump, who will be discussed as a separate group, 229 women stated that they had passed the menopause. In 26 cases the lapse of time between the menopause and the onset of symptoms was not stated. In 11 cases the last period had occurred within the previous year, in 30 cases within the previous two years, and in the remaining cases between three and 35 years before. Many patients in the menopausal years could make no distinction between the irregular and occasionally hemorrhagic bleeding which sometimes accompanies the climacteric and the bleeding which heralded the onset of malignant disease. One white woman, 59 years of age, had had episodes of irregular bleeding for the preceding 10 years but during this whole period had never consulted a physician.

ETIOLOGIC CONSIDERATIONS

This investigation contributes nothing to the possible etiology of cancer except, as will be pointed out later, that it confirms further the concept that the disease is prone to develop in lacerated and diseased cervices. Inquiries as to familial cancer seem to have been very casual, and only 11 instances of the disease, in only three of which the cervix was involved, were reported among the patients' relatives.

It is of interest that one patient in the series had a primary carcinoma of the stomach, one a primary carcinoma of the breast, and one a basal cell carcinoma of the forehead in addition to the cervical malignancy. Several death certificates listed the causes of death as carcinoma of the rectum or the bladder, but death certificates, as will be pointed out later, may be highly inaccurate, and it is believed that in all instances these malignancies were not primary but were merely extensions of the original cervical disease.

Sorba[1] has suggested, with not very convincing reasons, that syphilis may play some part in the etiology of cancer. In this series 17 white and 35 negro women either had positive serologic reactions or had past histories of syphilitic infection. The incidence of syphilis at the New Orleans Charity Hospital, however, is generally high, and these figures are not regarded as of any significance.

HISTOLOGIC CLASSIFICATION

With few exceptions, gynecologists and radiotherapists agree that the histologic type of cervical malignancy does not play a major role in the outcome of a given case. This is a reasonable point of view. In the first place, the stage of the disease at which the patient is seen is infinitely more important than the histologic type. In the second place, the radioresistance of slowly growing malignant cells, generally speaking, balances the response to irradiation of rapidly-growing cells.

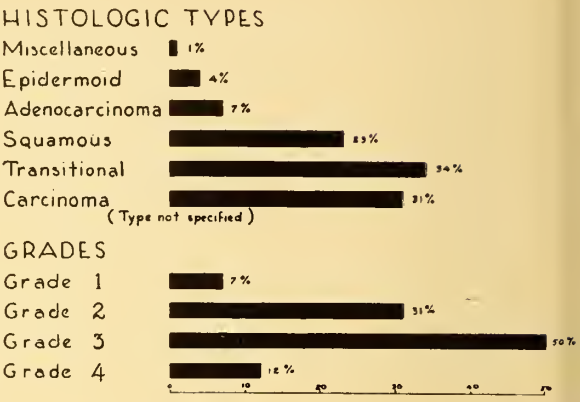

Fig. 2. Distribution of histologic types in 500 cases, and grades of malignancy in 303 graded cases, of carcinoma of the cervix.

The histologic study of these 500 cases (fig. 2) throws no light upon either the fatal or the surviving cases. In the 39 surviving cases, the malignancy was classified merely as carcinoma in seven, and as "very early" carcinoma and as epidermoid carcinoma in one each. In the remaining cases transitional and squamous cell malignancy appeared in about equal proportions. In the 29 cases in the surviving group in which grading was done, one case was listed as grade 1 and another as grade 4. The remaining cases were rather evenly distributed between grades 2 and 3.

CLINICAL CLASSIFICATION

Infinitely more important than the histologic classification of cancer in any location is the clinical classification or stage of the disease. The prognosis in any case of carcinoma of the cervix depends upon two chief considerations: (1) Whether the disease is clinically recognizable or can be diagnosed only by the microscope, and (2) whether the disease has spread beyond the cervix. If the malignancy can be recognized only microscopically and if it has not spread beyond the cervix, it is early and the chances of cure (salvage) are good. If it is recognizable clinically and if it has spread beyond the cervix, it is advanced and while cure (salvage) is entirely possible in some cases, it has become problematical in all.

It is unfortunate that so much confusion has arisen concerning the clinical classification of carcinoma of the cervix. The League of Nations classification[2] is widely used but it is impractical for any but experienced gynecologists, who must be possessed, at that, of a high degree of omniscience to classify the disease in the detail required. Furthermore, as N. F. Miller[3] has pointed out, this classification does not take cognizance of the physical impossibility of determining definitely at any given stage of the disease whether or not parametrial extension has occurred.

From the standpoint of clinical classification the 500 records studied from the New Orleans Charity Hospital are extremely confused. They could scarcely be otherwise. In the first place, the hospital staff had not adopted (and still has not adopted) any standard of classification. In the second place, there was seldom anything on the individual record to indicate what system of classification had been used. Finally, the evaluations were done by a large group of men of varying abilities and of varying degrees of optimism. It was unfortunately clear, however, that the great majority of cases were advanced. The most liberal interpretation of the material does not permit the inclusion of more than 50 or 60 cases in stage 1, and puts 125 to 150 cases in stage 4, in which the parametria are fixed or the whole pelvis is frozen.

The League of Nations classification requires that when there is doubt as to the stage to which a given case is to be allocated, the earlier stage should be chosen, and requires, further, that when a stage has been determined upon prior to treatment, it should not afterward be altered. These requirements are naturally essential in the statistical comparison of series of cases, but otherwise are somewhat impractical. In a fair number of cases in this series an earlier optimistic classification made on the first examination was changed, when the patient had been thoroughly relaxed under anesthesia, to a later, more advanced stage. The second decision, so far as the cases followed up are concerned, usually proved correct. On the other hand, one patient whose condition was thought to be so advanced when she was first examined that presacral sympathectomy was done as a prophylactic measure following irradiation, is still alive and well at the end of eight years. In a number of instances examination by equally experienced gynecologists, resulted in two different opinions, the more pessimistic of which almost invariably proved to be the wiser.

CLINICAL STATUS

More than half of the patients in this series were in poor physical condition when they were first seen because of the malignant disease itself. Many had suffered exhausting hemorrhages; in a number of instances the hemoglobin level was only 30 per cent and the red blood cells numbered less than 1,500,000 per cubic millimeter. Transfusion was frequently necessary before any treatment could be considered. Many patients were cachectic and many had lost large amounts of weight. Some weighed less than 100 pounds when they were first observed, and one patient, who died five weeks after she was first seen, weighed 65 pounds at death. Many had foul discharges, many had active infections, and some had rectovaginal or vesicovaginal fistulas or both.

Eleven patients, 10 of whom were negroes, were moribund when they were first seen. One negro woman was brought in by ambulance after an exsanguinating hemorrhage and died within eight hours. So far as could be determined, she had had no previous medical care of any kind.

The poor physical status of a number of patients was due to extragenital conditions as well as to malignant disease. Sixteen white and 54 negro women were hypertensive, the systolic pressures in some instances reaching 280 mm. mercury. Sixty-five women had various forms of cardiac disease, which frequently was very serious. Five had diabetes and three had chronic nephritis (not related to extension of malignancy to the urinary tract). Thirty-four white and 35 negro women were obese, the majority in this group weighing between 200 and 225 pounds and one weighing 275 pounds. In at least two instances of obesity irradiation was abandoned as hopeless with the facilities available, and in a few other instances intravaginal irradiation was substituted for the usual technic. No patient thus treated is numbered among the survivors. According to the histories, four white and 32 negro women had uterine fibroids. Actually, the number of fibroid cases in the negro group was probably higher; it is believed that the records were not accurate in this respect.

DIAGNOSTIC CONSIDERATIONS

In more than 90 per cent of the 500 cases which make up this series a clinical diagnosis could readily have been made, though, as will be pointed out later, carcinoma of the cervix was not always the first diagnosis considered. Diagnosis in every instance was eventually established by biopsy, which in 15 instances was done from two to four times.

PATHOLOGIC PROCESS AND CAUSE OF DEATH

Since postmortem examination was performed in only 72 of the 358 known deaths in this series, an extended discussion of pathologic changes would not be particularly profitable. For all practical purposes they are similar to the changes excellently described by Pearson and Garcia[4] in other series from the New Orleans Charity Hospital. The tabulation of complications in the present series is necessarily incomplete because considerably less than half of the fatal cases were under observation until death. Had all of the patients who died been followed to their exodus, the number would undoubtedly have been considerably higher.

The large number of cases in which urinary tract complications occurred is in agreement with other reported series. The involvement was variously due to encroachment of the growth on the ureters and to irradiation fibrosis; in many instances it was not possible to differentiate between these causes. Demonstrable bone metastases did not occur in more than 12 cases, but clinically occurred in several times as many. There were 16 recognized instances of vesicovaginal fistulas, 14 instances of rectovaginal fistulas, two instances of both varieties, and one instance each of sigmoidovaginal, ileo-uterine and ceco-uterine fistulas. Of 20 instances of pyometra (the number is believed to be unreasonably low) only nine followed irradiation.

The majority of the 92 patients who died in the hospital died of hemorrhage, cachexia, or urinary involvement, chiefly in the form of terminal uremia; in a few cases all three causes seemed to be operative. Four died of peritonitis following the application of radium. Four died of non-cancer-connected causes. Two would unquestionably have died shortly of malignant disease, but the other two, as already noted, had survived for five and seven years, respectively, without evidence of recurrence.

Statements as to the causes of death in the 266 patients who died outside of the hospital must be made with caution. With perhaps half a dozen exceptions the information secured from relatives gave cancer as the cause of death. Without exception the same cause of death was given in the cases concerning which information was secured from referring physicians. In a surprising number of instances, however, the causes of death secured from public statistics were stated to be other conditions than carcinoma of the cervix, though in many instances, as will be pointed out later, the patients had been observed too recently to make any cause other than malignant disease a complete improbability.

THERAPY

Irradiation: In all but 11 of the 500 cases in this series therapy consisted of radium, deep-voltage x-ray therapy, or both. At the present time the ideal treatment of carcinoma of the cervix, stated quantitatively, consists of not less than 5,000 mg. hrs. of radium and not less than 10,000 r units of deep-voltage therapy, though the modern emphasis, to speak categorically, is rather upon the areas irradiated than upon the total amount of irradiation. Furthermore, the dosages specified are neither safe nor practical for all patients, and salvage has been accomplished with very much smaller amounts. Four of the 39 survivors in this series, for instance, have survived seven years or more with single applications of 1,200 to 1,300 mg. hrs. of radium as their only treatment; obviously all had very early disease. In the whole series only 28 patients received treatment which meets the modern criteria, and it is ironic that only one of the 28 is included among the 39 survivors; the 27 others all had advanced disease when they were first seen.

The fundamental reason, aside from the individualization of dosage always required in the treatment of carcinoma of the cervix, why so few of these 500 patients received adequate treatment has already been mentioned, that during the period of this study the amount of radium owned by the hospital and the facilities for high-voltage therapy were totally inadequate for the case load. During the last two years of the study, as a matter of fact, most patients with advanced disease could not be treated even palliatively for the reason, at once cruel and merciful, that available facilities were reserved for patients in whom an absolute chance, or a greater chance of survival existed. That is one reason why 43 patients in the series had no treatment at all.

Since optimum modern treatment was for practical reasons impossible in most of these 500 patients, the arbitrary criteria were set up for the purposes of this analysis that a minimum of 3,000 mg. hrs. of radium and a minimum of 5,000 r units of deep-voltage therapy would be regarded as possibly curative treatment. Even by these lowered standards only 194 patients had either radium or x-ray treatment or both in adequate amounts.

Surgery: One of the 11 patients treated by surgery was submitted to Wertheim hysterectomy, following 3,600 mg. hrs. of radium and 3,960 r units of deep-voltage therapy. The operation was performed by a competent gynecologic surgeon but the malignant disease was more extensive than had been suspected and the patient died eight months after operation, after having developed distressing urinary tract complications. The other 10 patients were submitted to simple hysterectomy, cancer not being suspected in four instances when the operation was done, though a review of the records suggests that it should have been considered as a possibility in three of these cases. The details of these surgical cases will be commented on in a later paper in the series.

Palliative or pain-relieving procedures were done in a number of instances, as follows: Colostomy was carried out in four cases, in two of which it was the only form of treatment. Nephrectomy and bilateral renal decapsulectomy were done in one case each. Lumbar sympathectomy was done in five cases, in one of which it was the only procedure, and in another of which, as already noted, it represented unnecessary prophylactic caution. Alcoholic injections were done in a number of instances, always with limited and transient benefit, and sometimes with no benefit at all.

CARCINOMA OF THE CERVICAL STUMP

Twenty-nine patients in this series had been submitted to supravaginal hysterectomy, chiefly for uterine fibroids, from five months to 35 years before they sought medical consultation for malignant disease of the cervix. In six instances the operations had been done within the preceding two years, and malignant disease was undoubtedly present when they were performed. Eleven patients were white and 18 were negro. Four patients, all negro, are known to be alive from seven to 11 years after treatment. Two of the survivors had been operated on within two years and the two others within seven years of the development of symptoms of malignant disease.

Another patient (not a survivor) possibly should be added to the group of patients with carcinoma of the cervical stump. She reported cessation of menstruation following an "operation on the ovaries" 16 years earlier; the history was suggestive of uterine fibroids. Extensive malignant disease precluded any decision as to whether or not the uterus was present, and postmortem examination was not permitted.

SUMMARY

This is the first of three papers concerning the results of an attempted follow-up study of 500 women with carcinoma of the cervix treated at Charity Hospital of Louisiana at New Orleans over the approximately five and one-half year period ending July 1, 1937. The statistical results of the study are reported in this communication; succeeding communications will deal with the implications of these results and the conclusions to be drawn from them.

Of the 500 women in the series, 183 of whom were white and 317 of whom were negro, 358 are known to have died and 39 are known to be alive for periods varying from seven to 12 years after treatment. Two other patients, who died of non-cancer-connected causes after surviving for five and seven years, respectively, without recurrence, should be included among the survivors.

The age, parity, histologic classification, clinical classification and other data are reported. All but 11 of the 50 patients were treated by irradiation, but only 28 had treatment which meets the modern criteria. The basic reason for the inadequacy of therapy was the lack of adequate facilities for treatment in relation to the patient load during the period covered by the investigation.

Of the 29 patients with carcinoma of the cervical stump, four, all negroes, are included among the 39 survivors.

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THE TREATMENT OF CARCINOMA OF THE CERVIX AT CHARITY HOSPITAL*

II. ANALYSIS OF 716 CASES THREE-YEAR AND FIVE-YEAR END RESULTS

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and
J. V. SCHLOSSER, M. D.†
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Two years ago we presented before the Society a preliminary report of the end results obtained in the treatment of carcinoma of the cervix at Charity Hospital (Garcia and Menville, 1943); the results were assessed at the end of three years and covered the period April, 1938 to August, 1939 inclusive. A greater number of cases has now become suitable for analysis, and in the present communication we propose to review the work for the four year period ending March 31, 1942.

PLAN OF TREATMENT

The plan of treatment we have adopted has gradually evolved from a critical evaluation of the technic employed in other clinics (Lacassagne, Tod and Meredith, Schmitz, Hurdon, Healy and Twombly), and from the experience accumulated in treating over a thousand patients with carcinoma of the cervix since supervoltage equipment became available to us in 1939. The method of treatment followed till then was described in our previous report. The radium technic has been placed on a more rational basis but remains essentially unchanged. The use of higher voltage, however, made it necessary to proceed with caution, since even today the literature contains scanty information on proper dosage with this quality.

It is well to realize that x-ray therapy is an essential part of the treatment, not an auxiliary measure to be used haphazardly. Unless particularly favorable circumstances prevail, radium can be expected to control the disease only in the central zone of the pelvis, the more peripheral neoplastic foci being inadequately irradiated; hence x-rays must supply this deficiency. It follows that the two sources of radiation are mutually complementary, and that they must be carefully integrated if one is to secure fairly homogeneous irradiation throughout the areas actually or potentially invaded by cancer.

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*Read before the Orleans Parish Medical Society, May 14, 1945.

†From the Department of Radiology, Charity Hospital of Louisiana, and the Tulane University of Louisiana School of Medicine.

With this objective in mind, x-ray therapy is administered first and is calculated to deliver a dose of 3000 r ± 15 per cent to the lateral edge of the parametria in a period of three weeks. This is followed in a few days by radium therapy, giving 6600 r to the paracervical region in five days, which requires an exposure of 6500 to 8500 mghrs. The total duration of treatment is thirty to thirty-one days. The three-dimensional distribution of the combined irradiation then encompasses the main areas of involvement in a dosage range high enough to anticipate control of the disease in a substantial proportion of the cases (Mayneord et al, Mayneord and Lamerton, Quimby).

Since the irradiated zone is small this plan is obviously a compromise between theoretical completeness and practical possibility, especially as regards the treatment of the pelvic lymph nodes. We feel however that it is better to irradiate intensively the sites of frequent metastases than to irradiate inadequately all possible areas of involvement, especially when such an attempt is associated with greater risk of immediate and late reactions.

Certain modifications of the plan of treatment occur in practice. In patients with severe infection radium therapy may be impossible and intravaginal x-ray therapy by Merritt's method has been substituted. In carcinoma of the stump, and in recurrences, interstitial radium therapy must be frequently employed. In late cases x-ray therapy alone may be possible.

THREE YEAR SERIES

The material consists of 716 consecutive cases of carcinoma of the cervix admitted to Charity Hospital during the four-year period ending March 31, 1942. All cases with a clinical diagnosis of carcinoma of the cervix are accepted in our institution, even when moribund, so no selection of any type has been exercised in assembling this series, except that cases without histologic proof have been eliminated. This enables us to report absolute rates in accordance with the rules of the Radiologic Sub-committee of the League of Nations (Heyman, 1940). It means that we are in a position to assess the minimum accomplishment of treatment in dealing with the entire material, since untreated, incompletely treated, and untraced patients are included in the computation of the results. In this connection it may be mentioned that 96 per cent of the cases have been traced*—98 per cent of the white and 95 per cent of the colored.

TABLE 1
CARCINOMA OF THE CERVIX
HISTOLOGICALLY VERIFIED CASES
APRIL 1938 - MARCH 1942
THREE-YEAR END RESULTS

	Primary	Prophylactic	Recurrent	Total
Examined	652	27	37	716
Treated	640	23	31	694
Untraced	27	2	1	30
Survived Three years	244	18	6	268
Absolute Survival Rate	37%	67%	16%	37%

The three year end results are shown in table 1. We have divided the cases into three groups: primary, that is, the patients without previous treatment; recurrent, those with active cancer reappearing after treatment elsewhere; and prophylactic, the ones with apparently healed lesions seen following operation or radiotherapy. In the majority of the cases included in the last group the disease was discovered accidentally at the time of panhysterectomy for fibroid. In general the results conform with the rates previously reported but are more reliable, since they are based on a larger number of cases.

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*Follow-up has been a laborious task, carried out with great perseverance by Miss Gladys Stoltz of our secretarial staff. We gratefully acknowledge our indebtedness to many physicians throughout the State, and to the personnel of welfare agencies and of the Social Service Department of the Hospital who have given us valuable assistance in tracing our cases.

TABLE 2
PRIMARY CASES
PROGNOSIS FACTORS

Stage of the Disease	No. of Cases	Survivors	Absolute Survival Rate Per cent
Stage I	56	46	82
Stage II	182	91	50
Stage III	319	101	31
Stage IV	95	6	6
Total	652	244	37
Race			
White	226	94	42
Colored	426	150	35
Lesions of Stump	44	20	45
Adenocarcinomas	20	6	30

Some of the factors which may have influenced the outcome of treatment in our series are analyzed in table 2. Most important of these is the stage of the disease; it can be seen that the likelihood of survival is inversely correlated to the extent of neoplastic invasion. The white patients fared better than the colored, while lesions of the stump show a considerable improvement over our previous report.

TABLE 3
CARCINOMA OF THE CERVIX
April 1, 1938 - March 31, 1939
FIVE YEAR END RESULTS

	No. of Cases	Well 5 years	Absolute Recovery Rate
Primary	293	80	27
Prophylactic	14	6	43
Recurrent	22	2	9
Total	329	88	27
PROGNOSTIC FACTORS IN PRIMARY CASES			
Stage of the Disease			
Stage I	26	19	73
Stage II	80	32	40
Stage III	139	29	21
Stage IV	48	0	0
Race			
White	108	39	36
Colored	185	41	22
Sepsis			
Uninfected	202	64	32
Infected	91	16	18
Paracervical Dose (Calculated in 181 cases only)			
Less than 60%	54	0	0
60- 90%	47	15	32
90-120%	62	29	47
More than 120%	18	7	39
Age—			
25-34	38	11	29
35-44	86	24	28
45-54	93	30	32
55-64	49	8	16
65-74	21	7	33
Unknown	6	0	0

TABLE 4
COMPARISON BETWEEN RESULTS OBTAINED BY THE THREE CHIEF TECHNICS OF TREATMENT OF CARCINOMA OF THE CERVIX UTERI
(Todd, 1936)

Technic	No. of Cases Treated	Five Year Survivals	Percentage
American	3,130	654	21
Stockholm (Heyman)	1,203	281	23
Paris (Regaud)	1,106	305	28

RADIATION MORBIDITY AND LATE SEQUELS

It has been shown that the technic of treatment largely governs the proportion of primary and late reactions, and studies intended to develop methods of reducing their incidence have been published, notably that of Martin of Dallas. Many of the suggestions advanced have proved effective, so that severe morbidity of long duration must now be ascribed to faulty management.

TABLE 5
RADIATION SEQUELS IN 652 PRIMARY CASES

	No. of Cases	Incidence Per Cent
Rectovaginal fistula	22	3.4
Vesicovaginal fistula	8	1.2
Ileovaginal fistula	2	0.3
Ileovesical fistula	1	0.2
Colostomy	14	2.1
Factitial proctitis	3	0.5
Intestinal obstruction	4	0.6
Nephrectomy	4	0.6
Fracture of femur	5	0.8
Atrophy of leg	1	0.2
Total	64	9.8

TABLE 6
COMPARISON OF SURGERY AND RADIATION

	Bonney* "Gland-Free" Cases	Charity Stages I & II	Bonney "Gland Involved" Cases	Charity Stage III
Proportion of entire material included	38%	36%	25%	47%
Number of cases	300	106	200	139
Primary mortality	10%	0%	20%	2%
Well 5 years	159	51	42	29
Recovery rate	53%	48%	21%	21%

$X^2=0.756$

P = 38%

Except in cases with a flareup of infection the symptomatology from immediate reactions was mild and transient in our cases, and for this reason analysis of the primary morbidity is unnecessary. Late sequels observed in all the primary cases included in this report are listed in table 5. Most of these lesions arose from renewed activity of the tumor after treatment and not from the direct effects of radiation, although the treatment must be held responsible, in the sense that it failed to control the disease and allowed the development of complications. It should be obvious, however, that if an earnest effort is made to secure control of the disease by radiation a certain proportion of injuries is unavoidable, especially in cases where no other method of treatment holds out a prospect for cure.

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*J. Obst. & Gynec., 48: 421, 1941.

FIVE-YEAR SERIES

Three hundred and twenty-nine patients examined up to March 31, 1940 have been under observation for five years or more and the results obtained in their treatment appear in table 3. The absolute survival rate for the entire material, that is, the proportion of patients alive five years, is 28 per cent, and the recovery rate, the proportion of cases well five years, is 27 per cent.

Fourteen patients died during the course of or following treatment, but only the deaths associated with radium therapy can be fairly attributed to the method of treatment, since the others occurred in patients with far advanced disease in whom a fruitless effort was made to secure palliation. Some had extra-pelvic metastases, some severe infection and others low-grade azotemia. Perhaps it would have been wiser not to treat them at all, but we believe, nevertheless, that treatment is justified in nearly every instance, since even what appear to be hopeless cases occasionally derive substantial benefit.

Todd's interesting analysis of the principal radium technics appears in table 4. Several clinics have obtained considerably better rates than those shown in the table but Heyman (quoted by Martin) reports that the five year survival rate in a group of 10,970 primary cases collected in 1941 from the leading clinics of the world is 26 per cent. Seventy-five per cent of all patients alive at three years remain well for five years.

Some of the factors which may have influenced the outcome of treatment in our series are analyzed in table 3. Most important of these is the stage of the disease, which shows the correlation with recovery mentioned for our three-year series. The youngest patient in our series was 23 years old and is included in the first group in the table; the oldest was 78 and is included in the last group. No corrections for age specific death rates have been made since there appears to be no correlation between the age of the patient and the chance for recovery. There is no indication that very young or very aged women have a worse prognosis, as has been suggested by some authors.

The recovery rate is significantly lower in the colored race, but it would be unsafe to conclude that this is due to a greater radioresistance of their tumors. It is well known for instance that the life expectancy in the negro is lower than in the white, and we find that the incidence of advanced lesions, of infection, of incomplete treatment and of untraced cases is greater among the colored than among the white. While the discrepancy is not large in any one of these factors their influence is all in the same direction, and it is very probable that the marked difference in the recovery rates is the result of their cumulative effect.

The recovery rate is significantly lower also in patients who showed septic complications at the time of treatment. We have felt that this difference was due to our inability to complete treatment in the presence of severe infection, but Regaud believes that infection increases radio-resistance and Goldscheider has presented impressive supportive evidence. She noted 12 per cent five-year survival in 341 pyrexial cases, whereas in 568 afebrile cases the rate was 52 per cent. This difference was apparent even in patients who had full treatment. It would seem, therefore, that the control of infection is a vital factor in securing improvement in the results of radiation. We have been using penicillin for a year and have found it a very effective aid in this problem. Only last month we started using the Ruge-Phillipp's test in an effort to detect latent infection.

Two years ago one of us calculated the paracervical doses delivered in a group of 181 cases, in order to determine the relation between the quantity of radiation administered and the results obtained at three years. By using a correction for quality the doses of x-ray and radium therapy were added, and it was shown that in patients who recovered the magnitude of the dose increased as the period of treatment was prolonged. Dosage therefore became significant only when the duration of treatment was taken into account. This could be conveniently done by expressing the dose for each patient as a percentage of the average effective dose for her period of treatment. The cases have now passed the five-year period and are included in table 3. In can be seen that the results are not significantly improved by increasing the dosage beyond a certain minimum effective range. We may justifiably conclude that whenever it becomes possible to deliver adequate treatment the chance for recovery is in the neighborhood of 40 per cent no matter what the stage of the disease. The gap between this figure and the 27 per cent rate actually achieved is a measure of our inability to deliver proper treatment in many cases due to a variety of reasons: poor judgment in planning treatment, poor organization in conducting the work, advanced disease, intervention of complications, lack of cooperation on the part of the patient, and possibly a number of others.

In table 6 a comparison is made of the results obtained by radiation in our material with the work of Bonney, the most distinguished exponent of modern radical surgery in the treatment of carcinoma of the cervix. It is to be noted that, except for percentage fluctuations ascribable to chance, the *absolute* radiologic rates match the surgical results in *selected* cases.

COMMENT

Recent publications in the literature have urged a return to radical surgery in the treatment of carcinoma of the cervix, basing this contention on an alleged deficiency of radiation in the management of early lesions and on the frequency and severity of its complications.

A critical evaluation of the information at hand will readily show that such conclusion is unsound. There is abundant evidence to prove that when the criteria for the selection of cases to be treated by radiation or by surgery are the same, the results are the same, and the permanency of healing is the same. Irradiation offers a much lesser primary risk and discomfort, and under skillful management its late sequels are too infrequent to constitute a serious defect in the method. The absolute salvage attained by radiation is superior to that of operative interference, since its greater safety and flexibility give it a much wider scope in the management of the clinical material; consequently few patients need be deprived of its benefits.

In any event, a disproportionate emphasis on the management of the favorable case obscures the main issue in our subject. For it is in the treatment of advanced cases where our attention must be centered. An educational campaign has been waged for more than thirty years for the purpose of detecting the disease in its incipiency (Clark, Lewis). Yet advanced cases form the bulk of our material, and in all likelihood will continue to do so for many years to come. But it is encouraging to know that the full possibilities of radiation therapy have not been realized, and that rigorous application of the information already at hand can significantly reduce the mortality from the disease.

SUMMARY

The present study is based on 716 unselected cases of carcinoma of the cervix admitted to the Charity Hospital of Louisiana at New Orleans in the four year period ending March 31, 1942. The absolute three year survival rate for the entire group is 37 per cent. The absolute five year survival rate in a group of 329 cases seen through March 1940 is 28 per cent. Prognostic factors are evaluated, the plan of treatment followed is described, and the

morbidity and late sequels of irradiation are briefly discussed. It is concluded that radiation therapy remains the treatment of choice in carcinoma of the cervix in all stages of the disease.

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DISCUSSION

Dr. H. W. Kostmayer (New Orleans): I am in a position to comment on some of the difficulties that I have seen the profession go through with reference to the treatment of carcinoma of the cervix uteri. In the first place the cervix lends itself rather poorly to any type of treatment. The cervix, in contrast to the fundus uteri, is so intimately related to vital structures that to irradiate it successfully with massive doses involves serious risk to these structures and operation involves one of the very formidable surgical procedures.

Between 1914 and perhaps 1916 the gynecologic staff of Charity Hospital with which I was associated, requested the transfer to its service of all carcinoma of the cervix cases that came to the hospital and for months had them by mutual consent. At that particular time the Percy cauterization with an electric cautery, under guidance of the hand from above through laparotomy wounds and through a water cooled speculum—cooled with ice water—was done. We treated all these patients in the many stages of carcinoma and were terribly disappointed to find at the end of five years that we had no survivals. No survivals, I say. This was in contrast with the then reported 20-30 per cent from Wertheim hysterectomy for early carcinoma; with zinc chloride paste for more advanced forms of carcinoma; with Percy cauterization; with Wertheim hysterectomy; and with radium and x-ray treatment.

Our earliest attempts with radium and x-ray here in New Orleans, it is my recollection, were for cases beyond operability, the clinical grade III cases, and we began to get some startling results and even cures in cases that we attempted to palliate with radium without deep x-ray therapy. Most of us went readily from Wertheim hysterectomy, with poor end results, to irradiation. If this paper meant anything to me—and it meant a good deal—it certainly meant justification for abandonment of operation for carcinoma of the cervix uteri; this despite the statement that the end results are about the same. If this is so in the hands of a man like Bonney, devoting a life time to perfecting Wertheim technic, it nevertheless would be so in the hands of a very few. It is a very formidable undertaking to clean out the pelvis and remove glands and take away the uterus with the adnexa and two-thirds of the vaginal canal with electric cautery. It is a profound undertaking followed often by immediate death from exhaustion which might be less nowadays than when it was more popular. But it had following in its wake injuries to the bladder, rectum, great sloughs with profound postoperative hemorrhages and death, and the final five year survivals were nothing to be proud of. That was in the hands of skilled gynecologic surgeons. In the hands of an every-day surgeon I would shudder to think what the death rate would be with radical hysterectomy for carcinoma of the cervix.

It is a pleasure to discuss this splendid paper that indicates almost complete abandonment of surgical treatment for carcinoma of the cervix uteri.

Dr. Charles Dunlap (New Orleans): I think Dr. Garcia and Dr. Schlosser are to be complimented on the excellent results they have attained in treating this large series of relatively unfavorable cases of carcinoma of the cervix. A large proportion, you recall, were colored patients, many of whom came in for treatment late. You probably noticed too that they compared their results not with the average attained in the country but with the best results reported in the world's literature. Their report indicates that they are obtaining end results which compare very favorably with the best obtained anywhere in the world.

As a pathologist I am not in a position to speak of the clinical aspects of this work. I think the results speak for themselves, but as a pathologist

I was interested that Dr. Garcia and Dr. Schlosser make no mention of the histologic grade of the tumors. I am interested and I agree with the implied conclusion that the histologic grade of carcinoma of the cervix does not and should not determine the character of the treatment, nor the intensity or size of the dose of radiation. My former chief, Dr. Shields Warren, together with Dr. Joseph Meigs studied a series of cases of carcinoma of the cervix under radiation therapy, taking biopsies both before and after application of radium and x-ray. They found that those cases which showed an early and definite radiation reaction in the tumor and its surrounding stroma were the ones in which they might expect the most favorable end results but that the degree of radiation reaction to be expected could not be predicted by determining the histologic grade of the tumor beforehand. This is at variance with previous ideas, it being assumed that the most malignant or higher grade tumors would show the greatest response to radiation. That is not borne out by the work of Warren and Meigs and I believe Drs. Garcia and Schlosser are in general agreement.

I believe, however, that the histologic grade has some importance in determining the end results, since at autopsy in those cases not cured, we find much more widespread and more numerous metastases in patients with the higher grades of carcinoma of the cervix. It might be expected that these high grade tumors would metastasize earlier and more widely and hence be less favorable subjects for successful treatment. I realize that there is evidence in the literature that this may not be so, but in Warren's series the patient with low grade carcinoma lived on the average about twice as long as those with higher grades of tumor. I believe with others that the clinical stage of the disease, its extent in the body, is of paramount importance in determining prognosis but in cases of equal extent I do believe that the histologic grade, statistically, has some importance in determining prognosis.

Dr. Rudolph Matas: *No one at all acquainted with the progress accomplished in the treatment of cancer of the uterus as reflected in the literature of the last decade, can fail to recognize a contribution of outstanding merit in Drs. Garcia and Schlosser's report of their experience at the Radiological Department of Charity Hospital.

This is the second report on the results obtained in the treatment of cancer of the cervix by combined radium and x-ray therapy as evolved and systematized by Dr. Garcia and associates since the service was reorganized under his direction in 1939, when a supervoltage x-ray equipment became available.

In the present report a total of 716 primary (untreated) and unselected consecutive histologically proved cancers of the cervix, treated by radiation, resulted in 37 per cent three year survivals. Included in the total admissions are 293 primary unselected cases in all stages of the disease, in which radiation yielded an absolute five year recovery rate in 80 patients (27 per cent) of this group.

In the experience of the authors, 75 per cent of all patients who survive a three year period attain a five year extension and remain apparently well and free from the disease. Such results obtained in dealing with the advanced cases treated at the Charity Hospital must be recognized as a splendid achievement, which only the best equipped and most distinguished clinics in the United States and abroad, can attain.

As late as 20 years ago, such results would have been looked upon with doubt and suspicion but the excellent and steadily improved records of the radiologic department, aided by an unusually efficient follow-up service, which traced the fate of 96 per cent of the patients included in this report,—is a voucher for the correct computation of the results.

Even more cheerful is the prospect held by Dr. Garcia to the effect that "the present 27 per cent five year recovery rate will rise to 40 per cent or more" at no matter what stage of the disease,—when it becomes possible to deliver adequate treatment. "The gap between this figure and the 27 per cent rate actually achieved is a measure of our inability to deliver the proper treatment, due to a variety of causes." Preeminent among which is the advanced stages of the disease when the patients are admitted, due to delayed diagnosis, which reveals too late (in the great majority) the presence of cancer after it has scattered its seed to distant and inaccessible parts. Hence the long standing preachment and urge for early diagnosis by the surgeon and gynecologist, which finds its vigorous repercussions in the present national campaign for periodic examination of women at the critical age,—a campaign which should find an added spur in the experience of the Charity Hospital as presented by Drs. Garcia and Schlosser. Indeed, what better argument for early diagnosis and treatment than the fact that 75 to 85 per cent of the women who come early, when the disease is still confined to its birthplace, are practically all cured, while the late comers who arrive in the advanced second, third and fourth stages, have their

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*Through the courtesy of the Editor and the Secretary of the Society, I have expanded my original remarks at the meeting into a fuller contribution to the discussion from the viewpoint of a veteran of the wars with cancer, whose service began before Roentgen (1895) and the Curies (1906-11) had given the medical world the first effective weapons against this most deadly of human plagues.

chances for recovery reduced 50, 30 and 0 per cent.

This discrepancy between the possible and the actual rate of cure bears a direct relationship to the time at which the diagnosis is established and treatment instituted. It is in view of the insidiousness of the disease and feminine objections to systematic periodic examinations, especially instrumental, by women apparently well, that the "vaginal smear test," (which reveals the presence of cancer cells in the discharges) recently introduced by Papanicolaou and Traut (1943) and largely confirmed by Meigs and associates (Mass. Gen. Hosp.; Surg. Gynec. & Obst. Vol. 81:337, 1945) may be generally adopted because of its simplicity and great value as a warning of uterine malignancy in all women at the critical age. It has been found in all but 4 per cent in 1015 cases recently tested by Meigs. While a positive "smear" cannot be recognized as an absolute proof of cancer, it is sufficiently important to call for an immediate and thorough investigation.

On the other hand, I fully agree with Dr. Garcia and associates that a disproportionate concentration of attention on the management of the favorable first and second stage cases, obscures the main issue in the actual work of relief, "for it is the advanced cases that form the bulk of our material, and, in all likelihood, will continue to do so for many years to come." Hence the importance of improving and perfecting the technic of the combined radium-x-ray therapy which has already done so much, at the Charity Hospital and elsewhere, to save and prolong the lives of many seemingly doomed incurables.

In addition to the special features of the combined Roentgen and Curie technics which are so distinctive of Dr. Garcia's service at the Charity Hospital, and that give a decided personality to his mode of practice, there are many observations and conclusions drawn from the study of the great bulk of cancer material at this clinic, that contribute to the value of this paper. Thus the prognostic influence of race, age, pregnancy, lactation, histologic type, extent and grade of the tumor, and especially the coincident presence of infection which is the most formidable obstacle to the successful application of radiation. It is fortunate that by local and systemic resort to penicillin, Dr. Garcia has been able to control and eliminate many of the complicating visceral and abdominal infections—peritoneal, renal, vesical, rectal and intestinal—which have contributed so largely to the failure of radiation until the very recent past.

But all this information, important as it is, is chiefly collateral to the prime object of Drs. Garcia and Schlosser's report which is directed towards a determination of the relative merits of radiation and surgery for the cure of cancer of the cervix, as distinguished from the endometrial cancers of the body or fundus of the uterus—the dominant cancer of the female tract and the most frequent and malignant of all cancers after cancer of the stomach, an inquiry in which the two modes of treatment are presented with remarkable fairness and lucidity.

From the viewpoint of their own large and well analyzed experience—reinforced by the latest available knowledge as shown by the citations from the contemporary literature—the authors have omitted nothing that would clarify the discussion and justify the conclusion that "radiation is the treatment of choice for carcinoma of the cervix uteri, in all stages of the disease."

A careful and unbiased perusal of the original manuscript which Dr. Garcia very kindly gave me sometime before the lecture, has brought me, with some qualifications, to a complete agreement with the well stated reasons which have led the authors to this fundamental conclusion.

In recognizing the enormous progress of radium and x-ray therapy since its steady uplift from its disastrous empirical beginnings, in the first two decades of the century to its present great height of efficiency, we should not overlook the fact that surgery has, likewise, advanced far from the limits set in the pelvic field by its early gynecologic pioneers (Freund, Ries, Faure, Clark, Wertheim, Jonesco and others).

But the persistent gravity of the so-called radical Wertheim operations, despite the great authority of Bonney, of London, (in the lead with a series of 800 operations, and a primary mortality of 10 per cent for the early "gland free" cases, and 20 per cent for the advanced "gland involved" cases, exclusive of complications) was not encouraging to general surgeons and gynecologists who largely restricted the surgical treatment of cervical cancer to selected cases in which a plain panhysterectomy preceded by radiation, became the more frequent practice. Taussig's (St. ouis 1943) systematic extirpation of the regional lymph nodes added greater thoroughness to the operation and better results followed, as shown, also, by Lynch (San Francisco, 1943), who combined radiation with surgery. The primary heavy mortality and too frequently fatal secondary complications, continued to operate against the choice of surgery as a method of election except in cases in which radiation was inapplicable or contraindicated and surgery was the only alternative.

Despite improving surgical conditions, the drift of practice in the treatment of carcinoma of the cervix has been going steadily towards radiation until recently, when the report of 47 selective radical operations of the Wertheim-Taussig type, without a death, by Dr. J. Vincent Meigs (Boston), has called for a revision of all previous statistics of the operations performed for the cure of carcinoma of the cervix.

Dr. Meigs' operations were performed between 1939-1944 and in 40.4 per cent of the patients, radiation treatment had been given before operation and 10 of the patients had the complete radium-x-ray cycle, before operation. (Surg., Gynec. & Obst., Vol 78, Feb., 1944).

This unprecedented record has proved at least, how, in carefully selected and well prepared patients, an able and aggressive surgeon, well equipped with all the resources of modern surgery can demolish the barriers that shock, hemorrhage, exhaustion, infection (peritonitis) and dehydration have thus far put in the way of surgery in its attempts to rescue the victims of carcinoma of the cervix uteri. It is not surprising that the old citadels of this type of cancer are beginning to crumble under the impact of the new surgery with its inexhaustible blood banks and transfusions, nutritive infusions and "magical drugs,"—penicillin and the sulfa compounds. By these means and in this way it would seem that the pallid ghosts of the old Wertheims are being resurrected and brought back as animated combatant realities.

But unfortunately, the actual survival from the ordeal of the operating table—no matter how fine the performance—is no criterion of the ultimate fate of the patients since, as in this series of exceptionally well performed operations, 10.6 per cent of the patients have developed ureteral fistulae which "in all cases will mean ultimate nephrectomies." Besides, none of these patients had attained their fifth postoperative birthday and the majority has been too recently operated (22 within the first year of their operation; 13 within two years), to permit any definite assurance of their freedom from recurrence.

Since the extirpation of the cancerous uterus in its totality is no guarantee against recurrence in the parametrium or pelvic lymph nodes, this argument in favor of the operation as superior to radiation is a fallacy since so many Wertheims have been followed by recurrence in the relics of the vagina and other neighboring parts. In regard to the advantages of the Wertheims over radiation, I am reminded by my own personal experience that despite long operative sittings in an effort to extirpate all the classic lymph nodes that might be involved, I would leave the operating room dissatisfied, and in doubt that I had succeeded in accomplishing the main purpose of the operation. The operator does remove *obviously* infected glands, but he is never certain that he has removed them all. In fact, the anatomy of the pelvis and the distribution of the lymph tracts of the pelvis make a clean, sweeping "block excision" of the lymph nodes practically impossible. Nonetheless, the number of Wertheims that have been followed by permanent recovery show that the operation, especially when combined with radiation, does clear the pelvis of malignant nodules. The statistics of cures solely by radiation also confirm that the same effective control is obtained when radiation is applied by competent hands. It is only by the duration of survivals after the operation for at least five years without recurrence, disabling complications or fatal sequelae, that we can claim that the operation has proved truly curative.

Clinical experience and statistical evidence make it certain that in equality of circumstances, the curative properties of combined radium x-ray radiation are the same as by surgery and that the absolute radiation recovery rates match the surgical results in selected cases. In the consecutive, unselected cases, the absolute recovery rates of radiation therapy are superior to those of surgery. If the permanency of healing and the relative freedom from fatal complications is greater by radiation in skilled hands, it would seem fair that radiation should be given the first choice in all cases in which radiation is applicable, reserving surgery for the cases in which radiation is contraindicated or unavailable or has failed to function for any of the reasons previously given.

There is, apparently, no serious reason to fear that in skilled hands a good case for surgery would be spoiled by radiation. In fact, it is a general practice, in dealing with endometrial cancers of the body or fundus, to radiate first and operate some time afterwards. But the essential advantage of radiation is that when it is adequately and skillfully applied in the operable stages of cervix cancer, radiation is capable of destroying the disease without subjecting the patient to a mutilating operation which always involves risk to life, primarily or through its secondary consequences, that ultimately gives no greater guarantee of safety from recurrence or metastasis than radiation.

But even when the disease has advanced beyond the reach of topical or regional treatment by surgery, it is quite certain, statistically, that the absolute *salvage* achieved by radiation, as shown by the statistics of the Garcia Clinic is unequivocally greater by radiation than by surgery. The modest and respectful attitude of the ablest surgeons who have specialized in the radical operation for cancer of the cervix is well expressed by Meigs in commenting on his choice of surgery for his first 47 selective cases of highly improved Wertheim-Taussig operations without a death, he states: "It was essential in this (selected) series that the mortality be low, for the results of radium in the radiated cases are so good that a 10 or 20 per cent mortality would prohibit surgery, and a mortality of zero per cent, or a very low mortality, gives the operator a feeling that at least he is as well off as is the radiologist in treating this type of disease."

Regardless of differences of opinion on the relative merits of radiation and surgery for the cure of this gravest form of uterine cancer, there is every reason to rejoice at Dr. Meigs' unique record, for the perfection of surgery is always desirable and, in fact, necessary, in view of the many conditions and circumstances in which radiation is not applicable—as in dealing with certain individuals who are allergic to the x-rays and others whose tumors are radio-resistant. Besides, cancer of the cervix, complicated by inflammatory or septic pelvic lesions is always aggravated by radiation. It is in these and other cases of cancer of the cervix in which radiation is inapplicable, that surgery, at its best, is still the anchor of salvation for those who are yet able to undergo its gruelling ordeal.

CONCLUSIONS

The general conclusions to be derived from this discussion are: that there is no rivalry or conflict between surgery and radiation in the treatment of cancer of the cervix, though the collective evidence points everywhere to the greater utility and greater salvage of life through radiation when the sum total of its applications in unselected cases, as compared with surgery which is applicable only to selected cases. That our greatest weapon in the relentless warfare against this most insidious and fatal of cancers, are radiation and surgery; and that it is of the greatest importance that both modes of treatment be kept fit and perfected to the highest degree of efficiency in order to meet the varying indications of the individual patients. The success of both modes of treatment will be vastly improved when the practice of periodic examinations will become a universal and obligate duty of all women at the critical age.

Despite the great progress accomplished, we must not be deceived by our enthusiasm and wishful thinking because neither radiation nor surgery, alone or combined, is capable of solving the cancer problem. The one agent that would be capable of exterminating the plague of cancer by destroying the parent cells and pursuing their seed wherever it might travel along the ways and byways of the organism is still missing and an unknown X. Since World War II has come to an end, we have realized the incredible capacity of the American people for inventive and scientific achievements and we may hope that by applying the intelligence so well utilized for destructive purposes, we may now also concentrate the same intelligence in aid of the conservative forces that are now so deeply engaged in the vital struggle for the extermination of this monstrous evil.

The great merit of Dr. Garcia and associates is that they have assembled and brought here an analytical review of their abundant facts and long experience at the Charity Hospital. In this way, they have prepared a document which cannot fail to be useful to the medical man who, being neither surgeon nor radiologist, is called upon as a medical advisor and friend to arbitrate between radiation and the knife.

In conclusion, I am sure we are all indebted to Drs. Garcia and Schlosser for bringing to us this distinguished scientific contribution from their department at Charity Hospital, a contribution that is so enlightening, so creditable to themselves and so worthy of the cultural mission of this Society.

Dr. C. Gordon Johnson (New Orleans): I hesitate to rise after listening to Dr. Matas because there is usually very little to be added after his discussion. However, there are certain points which could not be overemphasized. First of all, Drs. Garcia and Schlosser are to be congratulated on the excellent results which have been obtained and which unquestionably compare most favorably with any group of reports on carcinoma of the cervix that I have seen. Secondly I think their follow-ups of 96 per cent are almost unheard of. I have not seen any reports which give such an excellent follow-up record. Third, it proves to me, that in the treatment of carcinoma of the cervix, particularly where handled by one man who is as competent as Dr. Garcia, that excellent results can be obtained. Such results could not be found where carcinoma is treated by every gynecologist or every general practitioner or surgeon who happens to get a case a year or perhaps four or five such cases. It unquestionably proves that where the treatment of carcinoma is relegated to one man or a group of men that the results will be as those presented to us by Drs. Garcia and Schlosser.

Dr. Walter Levy (New Orleans): I agree with Dr. Johnson that the chief thing brought out tonight is the value of cancer clinic. The slipshod methods used in treating these cases in private hospitals, and with no follow-up, is scandalous. We are now working on a tumor clinic at Touro which will be in charge of the radio-therapist there, with consulting gynecologists, surgeons, internists and different specialists. I think the results will be better although we may tread on the toes of private cases.

We did some years back a review of the gynecologic cases admitted to Charity Hospital over a ten year period. During that time—all carcinoma of the uterus—there were 1970 white to 2168 colored; percentage of total carcinomas 47.6 for white and 52.4 for colored. Percentage of cases, of total cases admitted to gynecology 47.9 white and 52.1 colored, showing the percentage to be the same.

I would like to ask Dr. Garcia if he noted in Hurdon's book that there is a 32 or 33 per cent total mortality of those cases treated by radium and if he advocates the use of x-ray before administration of radium. I noticed you used penicillin. Would you use radium before x-ray?

Another thing—we should always consult with a urologist before treating carcinoma of the cervix; there may be involvement of the ureters and bladder. This would surely affect the prognosis.

I do believe, from what Dr. Garcia has said and Dr. Matas has proved in his remarks, that the day of surgery in carcinoma of the cervix is practically over. Some few are going to come back to it but we are all not Victor Bonneys and if we were we would have to discount some 15 per cent mortality.

Dr. Manuel Garcia (In closing): Dr. Schlosser and I are grateful for the gracious manner in which our presentation was received. Dr. Kostmayer, Dr. Matas, Dr. Johnson, Dr. Dunlap and Dr. Levy were very generous; we certainly agree with their opinion as to the relative merits of radiation and surgery.

Dr. Levy mentioned the question of x-ray therapy prior to radium and its influence on infection. For several years we have routinely employed x-ray therapy first, under the impression that it cleared up local infection considerably, reduced hemorrhage and shrank the cervical tumor, thereby facilitating the application of radium. But we are unable to say that x-ray therapy definitely reduces the incidence of infection. We still get severe inflammatory reactions during the course of treatment and this is principally responsible for our radium mortality, which is 1.4 per cent. With penicillin and the sulfonamide drugs we hope to reduce it considerably.

Again we wish to express our thanks for the discussion. In acknowledging the honor of Dr. Matas' presence we must confess to a deep sense of satisfaction in having our "Master" speak so kindly of our work.

SOME HAZARDS OF ANESTHESIA*

JOHN ADRIANI, M. D.†

NEW ORLEANS

Those who work constantly in an operating room realize that a certain amount of hazard is connected with anesthesia. Still, surprisingly little thought is given to the causes of anesthetic accidents and the precautions for averting them. When a patient dies in the operating room, it is not always possible to ascribe the accident to any single cause. Most operating room deaths occur in patients whose condition is extremely poor but whose only hope of life is an operation. Surgery and anesthesia are merely unavoidable but contributing factors to the death. The outcome is anticipated in these situations and the end result is no surprise. In a small percentage of cases, some technical surgical error causes the patient's death. Although disconcerting to all, the surgeon recognizes and accepts the error as his responsibility. However, the most discouraging moments in surgery are experienced when the anesthetist loses the patient through an error in technic or judgment. Few things in surgery cause greater consternation than "anesthetic deaths." There are a number of reasons for this. First, they occur unexpectedly with dramatic suddenness in apparently "good risk" patients. Second, they result from a procedure which is incidental to, rather than a part of the operation itself. Anesthetic deaths, therefore, are difficult to justify and explain, particularly to lay persons. The surgeon is thus subjected to undue chagrin because he is held responsible for an error committed by an assistant.

Most anesthetic deaths are preventable deaths. In many institutions the cause of death, if investigated, is usually never determined and some vague final diagnosis, such as cardiac failure, status lymphaticus, shock, and so forth, is made. Postmortem examinations rarely reveal the few if any specific anatomic changes caused by anesthesia. The statistical reports of anesthetic deaths which appear from time to time in medical literature stress mortality according to drugs used. Statistics of this sort mean little because they appear to incriminate the drugs and do not take into consideration the manner of administration, the skill of the administrator and the condition of the patient. The first year the anesthesia department at Charity Hospital was organized under the direction of a physician, the mortality using pentothal was one in 240. If the data from which these figures are compiled are not carefully studied and interpreted, it appears that pentothal is an extremely dangerous drug. The death rate during the past three years has been reduced to zero. During this time, there has been no remarkable change in pentothal itself or in our knowledge of its use. The notable reduction in mortality has been accomplished by instructing the medical personnel in its judicious use and in the management of complications of anesthesia.

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Then, what are the hazards of anesthesia? When a patient dies from anesthesia, what causes death? To answer these questions, let us assume we are to be anesthetized for a laparotomy by an anesthetist unknown to us. Let us assume that inhalation anesthesia has been selected and ether is preferred by the operator. What would we have to fear from anesthesia under these circumstances? Many anesthetic accidents occur during the induction period. The anesthetist, in this case, let us assume, will follow the usual practice and use nitrous oxide or ethylene for induction. Both drugs are rapid-acting, non-irritating gases. They shorten the second stage of ether anesthesia. Although both drugs are innocuous mild anesthetic agents, they must be present in high concentration in the alveoli to obtain surgical anesthesia,—usually 80-85 per cent. Without proper preanesthetic sedation, anesthesia is not obtained unless the concentration in the alveoli is increased to the point of suboxygenation. Inexperienced anesthetists "push" these gases beyond the point of safety to obtain surgical anesthesia. Fatalities under these circumstances result from asphyxia. Deaths from nitrous oxide and ethylene are uncommon if there is no suboxygenation. However, the mortality rate from nitrous oxide or ethylene anesthesia is higher than is realized and these gases are not "safe," as is often quoted, unless non-asphyxial concentrations are employed. The discreet anesthetist fortifies his gas mixture with ether if there is a tendency toward suboxygenation. Asphyxia from suboxygenation during the induction period, therefore, is to be feared. In addition to suboxygenation, the anesthetist may have difficulty in maintaining anesthesia once it is established and allow the patient to emerge from the third into the second stage. Retching and vomiting invariably occur. Aspiration of liquid or solid material may, in this event, swiftly cause death from obstruction of the trachea and bronchi or initiate pulmonary complications which cause death postoperatively. Fatalities due to aspiration are common during obstetrical anesthesia. Asphyxia may also be a consequence of improper premedication. The omission of atropine or scopolamine preoperatively is, as a rule, followed by a copious secretion of mucous and saliva. Secretions in the larynx, trachea and bronchi obstruct the airway.

The maintenance phase likewise is not without dangers but they are not as numerous as in the induction period. Failure to maintain an adequate airway and overdosage are our chief concerns during this period. Overdosage in combination with anoxia, shock or hemorrhage presents a different picture, however. Any one of these factors combined with overdosage is the most frequent cause of death during the maintenance of anesthesia, particularly in "poor risk cases."

The termination of anesthesia and the immediate post-anesthetic period, like the induction period, is fraught with considerable hazard. Indeed approximately half the anesthetic deaths occur at this time. Again, asphyxia from one cause or another is the underlying factor. Aspiration of vomitus, premature removal of intratracheal catheters, "swallowing of the tongue," and laryngeal spasm are some of the most common causes. There is a tendency at this time for members of the operating team to relax their vigilance and to relegate the patient to the care of inexperienced individuals. The careless anesthetist neglects the patient to complete the chart, to prepare for the next case, or to tend to other comparatively trivial chores. The anesthetist should observe the patient closely until all reflexes have returned and the possibility of complications has passed. During this time, he should be prepared to deal with respiratory obstruction, emesis and other possible complications.

Although most fatalities from inhalation anesthesia are due to technical errors, a small percentage is due to some inherent property of the drug itself. Fatalities, when certain drugs are employed, may occur regardless of the skill of the anesthetist. Fortunately, nitrous oxide, ethylene and ether possess no inherent dangerous qualities. On the other hand, the same is not true for chloroform, ethyl chloride and cyclopropane because they disturb cardiac action. Death from cardiac failure occurs even when these drugs are carefully administered by a skilled individual. Chloroform is rarely used and therefore accounts for little if any of the mortality of inhalation anesthesia. Surprisingly, many users of ethyl chloride are not aware of its dangers. Syncope and cardiac failure are unavoidable possibilities when this drug is used for inhalation anesthesia. The usefulness of cyclopropane, which has heretofore been deemed an ideal anesthetic, is being challenged. Although anesthetists would hesitate to be without this valuable agent, the fact that it causes disturbances in cardiac rhythm cannot be overlooked. Deaths from cyclopropane, presumably of cardiac origin, are recorded from time to time. In the majority of instances, as in most instances when death has been due to anesthesia, the skill and judgment of the anesthetist have been open to question. Unless one is thoroughly familiar with the pharmacologic peculiarities of cyclopropane, considerable difficulty will be experienced in anesthetizing with this drug. If 100 patients are anesthetized with ether, 80, we will say, follow a given general pattern. If cyclopropane is given to the same 100 patients, 50 perhaps follow a given pattern and the other 50 will exhibit bizarre reactions such as apnea, spasm, depressed respiration, bradycardia, hypertension and so forth. The experienced anesthetist easily recognizes these peculiarities and deals with them accordingly; the inexperienced administrator finds himself in difficulties. This anesthetist would be fearful of cyclopropane anesthesia if he were unfamiliar with the capabilities of the individual administering it. Still it must be borne in mind that cardiac effects are an inherent property of the drug itself. Even in the hands of the most expert, fatalities may occur if the drug is employed in the presence of increased cardiac irritability. As in the case of ether anesthesia, asphyxia, overdosage and aspiration are also possible complications with chloroform, ethyl chloride and cyclopropane. In recapitulation, then, asphyxia from one cause or another is the most frequent cause of death from inhalation anesthesia.

Other methods of anesthesia also are not without drawbacks. Let us assume we are to be given intravenous anesthesia for some minor procedure, what is there to fear? Satisfactory intravenous anesthesia has been made possible by the development of such potent barbiturates as pentothal, evipal, pernocton and so forth. Intravenous anesthesia is simply induced and maintained. Unfortunately, this simplicity of induction and maintenance appeals mostly to those who are unfamiliar with its hazards and to those who tend to regard anesthesia lightly. There are a number of questions we should ask ourselves before submitting to anesthesia with pentothal. Will the anesthetist concentrate his efforts on the venepuncture and injection or will he delegate this relatively unimportant part of the procedure to an assistant and merely direct it himself. The discreet anesthetist devotes his entire attention to observing respiration, circulation, depth of narcosis and maintenance of a satisfactory airway. Individuals not aware of the dangers of anesthesia invariably concentrate their attention on the intravenous injection and neglect the patient almost entirely. Asphyxia from obstruction is as real in intravenous anesthesia and as potent a hazard as in inhalation anesthesia. Another question we should ask is will intravenous anesthesia be selected for an operation about the head and neck? Too often the fact that the patient must breathe is ignored and intravenous anesthesia is decided upon because the anesthetist is removed from the operative field. Fatalities occur because the anesthetist is removed from the operative field. Fatalities occur because the anesthetist does not have control of the airway. Another question we should ask is will a laryngeal spasm develop and will the anesthetist recognize and handle the situation skillfully? Laryngeal spasms are not uncommon when barbiturates are used for deep hypnosis. Such spasms are often so severe that they initiate the train of events that lead to asphyxiation of the patient. The respiratory depression, so characteristic of anesthesia with barbiturates, the progressive decrease in sensitivity of the respiratory center, and the irreversible and uncontrollable nature of the method are all features which we should consider carefully before submitting to this form of anesthesia. As in inhalation anesthesia, the greatest hazard of intravenous anesthesia is asphyxia from obstruction of the respiratory passages from one cause or another.

To continue this question of the hazards of anesthesia further, let us assume that we wish to remain conscious during the operation and that spinal anesthesia has been chosen for our operation. Those who use or have seen spinal anesthesia used extensively know that it, too, is not without hazards. The mortality is shamefully high in the light of our present knowledge of the conduct of this technic of anesthesia. It cannot be denied that spinal anesthesia provides muscle relaxation which is not duplicated by any other method. The desire for this extreme degree of relaxation clouds the judgment of many an operator and leads to the selection of spinal anesthesia for subjects who are unable to withstand the physiologic disturbances which follow its induction.

Death from spinal anesthesia is caused by one of two mechanisms: (1) respiratory failure, and (2) circulatory failure. Both complications appear early in the course of anesthesia and both are avoidable. In respiratory failure, the drug ascends into the upper thoracic and cervical portion of the spinal canal and paralyzes the intercostal muscles and the diaphragm. If immediately recognized it need not be serious. However, if no attention is paid to respiration, the condition is overlooked until circulation fails at which time it will be too late. The well-trained anesthetist closely observes both respiration and circulation. When respiratory failure occurs, artificial respiration by any instantly available method is indicated. Much nonsense has been written about the paralysis of the medullary centers by the upward ascent of the drug. Long before this occurs, respiratory paralysis ensues because the drug affects the intercostal and the phrenic nerves first. Respiratory failure accounts for no deaths in hospitals where well-run anesthesia departments are established. Death from this complication usually results in the hands of the occasional spinal anesthetist who neither recognizes nor knows how to manage the complication when it occurs.

The majority of deaths from spinal anesthesia are from circulatory failure. It is a matter of common knowledge that the fall in blood pressure accompanying spinal anesthesia is due to peripheral circulatory failure. The mechanism causing it is not understood. The severity of the circulatory disturbances increases with the number of dermatones anesthetized. Fortunately, vasopressor drugs are effective restorative agents. Some operators disregard the hypotension when it appears. In robust subjects, mild disturbances right themselves without ill effects. Severe disturbances, if untreated, however, progress to the point of respiratory failure and death. Patients who have cardiac disease, anemia, hypotension, cachexia, shock or hemorrhage are not suitable subjects for spinal anesthesia. Patients who have increased intra-abdominal pressure from intestinal obstruction, ascites, pregnancy and other causes are notoriously poor subjects for spinal anesthesia. A sudden precipitous fall in blood pressure follows the establishment of anesthesia in these subjects. Unfortunately, in these cases, the circulatory system does not respond or responds sluggishly to vasopressor drugs. Often the blood pressure falls abruptly and death occurs before one has the opportunity to administer the vasopressor drug. The question of "toxicity" of the drug always arises when such an accident occurs. Reactions due to toxicity are due to accidental intravascular injection of the spinal anesthetic drug. These are rare occurrences but are possibilities. It is unfortunate that a valuable technic such as spinal anesthesia falls into disrepute because it is employed injudiciously. Deaths are due to the use of the technic in patients who cannot tolerate it. Most accidents occur when "high spinal" is induced, but the injudicious use of "low spinal" is not without hazard.

It is not in the scope of this presentation to include other than the commonest and most obvious hazards of anesthesia. In studying anesthetic deaths, it is remarkable how frequently an anesthetist, in stating the sequence of events leading to the accident, relates that "the patient was doing well and all of a sudden he died." However, it is also interesting to note that upon further questioning, certain significant prodromal signs were not recognized. A change in the character of respiration, or pulse, twitchings of small muscles, and so forth, all of which are significant warnings of impending disaster to a trained, experienced observer, were overlooked. Failure to observe and heed these warning signs is not due to carelessness or neglect, but rather to a lack of knowledge of the science of anesthesiology. The administration of anesthetics requires more than a mere knowledge of the mechanics of the selected procedures. An anesthetist must possess a knowledge of the physiology and pharmacology of anesthetic drugs as well as a familiarity with the disease and the effects the drug, the surgery, and other factors have upon the disease. Without such a background, the anesthetist is merely a technician. Few technicians possess the power of observation necessary to insure maximum safety to the patient. A good anesthetist is not one who knows how to overcome a difficult situation, but one who knows how to avoid one. A technician, as a rule, may manage successfully in an uncomplicated case. However, in unusual circumstances, he is neither capable of avoiding a difficult situation or coping with it when it arises.

DISCUSSION

Dr. Rudolph Matas (New Orleans): I am much impressed with the practical value of Dr. Adriani's paper. His remarks on the education and training of the anesthetist are spoken with the voice of experience, knowledge, and authority. Indeed, anesthesia has become such a complicated and responsible vocation that too much stress cannot be laid on the educational requirements and vocational aptitudes of the individuals who intend to adopt anesthesia as a career.

While the hazards of anesthesia are largely the result of inadequate training, inattention, lack of discipline, defective judgment and undeveloped sense of responsibility, there are other risks which are not due to ignorance or lack of experience but to the overweening confidence of some anesthetists in their ability to overcome all difficulties and control all circumstances. The desire to accommodate an impatient surgeon, anxious to get through with a big day's work, or, in other cases, the call to "relax!" "relax!" in dealing with a stiff abdomen, are frequent causes for overdosing and keeping the patient on the "ragged edge of destiny," with life hanging on a narrow strip of the medulla oblongata! It is then that prodigies of skill are required to play on the oxygen tank, the carbon dioxide and the "gas" cylinders, in order to keep the *vital tripod* going.

Of course, the broken teeth, sore, bleeding tongue, and stiff jaws, following violent efforts to pry the jaws open and pull the tongue forward with forceps, to prevent threatened asphyxia, are only "accidents" which have become too classical in

None the less, anesthesia was indeed hazardous in the old days when the interns who administered the chloroform became too much interested in the operation and in the operator, to watch the storm signals gathering about the patient, and act in time to avoid the crash. Such results of inadvertence and diverted attention, recall a very remarkable episode that I witnessed as a student when Dr. Richardson,[†] the professor of surgery, was extirpating a lipoma from the thigh of a robust young man. While the operator was clearing the tumor out of its bed, the patient gave a slight convulsive movement which made the operator look up and realize that the patient had turned almost black from asphyxia, while the young anesthetist, frightened and bewildered, was making vain attempts at artificial respiration. In an instant Dr. Richardson literally jumped to the side of the patient and without a moment's hesitation, opened the larynx in two strokes of the scalpel he had been using for the extirpation of the tumor, thrusting the handle of the knife into the larynx to keep it open. Almost immediately the patient began to breathe and the purple, cyanosed face gradually returned to its normal pale, pinkish color as the respiration and circulation improved. The large audience of students, who always gathered for these operative clinics, had been witnessing this unexpected drama with intense and pent up interest,—now, suddenly and irresistibly broke out into a tremendous burst of applause which Dr. Richardson checked with uplifted hand, and the words: "Silence, gentlemen, the man is safe, but we have more work to do." And he calmly proceeded to complete the extirpation of the tumor, leaving his senior assistant to close the wound and apply the dressings,—both to the thigh and to the neck. The anesthetist, a very young and sensitive youth, was too deeply affected by his part in the near-tragedy, that he resigned from the staff, but was induced to reconsider his resignation by Dr. Richardson himself.

[†] Tobias G. Richardson, M. D., 1827-1892. Professor of Anatomy, Medical Department University of Louisiana, now Tulane, 1858-1872; Dean 1865-1885; Professor of Surgery 1872-1889; resigned 1889 on account of ill health. Died in 1892 in New Orleans. Author of Richardson's Elements of Human Anatomy, New Orleans, 1853. Richardson Memorial Building (now on Tulane Campus) was erected by his widow, Ida Slocomb, May 19, 1908.

Fortunately, the modern professional anesthetist has more than enough to do in recording the signs of danger, to fail to recognize them through inadvertence. He is, also, too busy engineering the battery of gas cylinders which he has to keep functioning harmoniously, like an organist playing on a pipe organ, with great care to avoid a false note that might ruin the whole performance.

While preaching against the sins of inattention and of a defective sense of responsibility, there are other sins and "accidents" which have developed more recently with the advance of surgery and the creation of new technics to which Dr. Adriani has referred with sufficient emphasis. There are, however, two cases in this category that have specifically impressed me with their easily disregarded danger. One occurred in a thin, weak young woman with extremely low blood pressure, who had to be kept in Trendelenburg position nearly an hour with knees bent and legs hanging from the edge of the elevated table. Just as the operation (a deeply adherent pus tube) had been completed and the operating room leggings removed, it became apparent that the tips of the toes in both feet were intensely cyanosed and actually necrotic. Despite pulsating pedal arteries, small black eschars remained which it took several weeks to heal, long after the patient had recovered from the abdominal operation.

This unfortunate and rare event, caused by prolonged ischemia, could have been avoided if the patient's feet had been kept under observation while in the Trendelenburg position.

In another case, a very stout patient, also requiring a long-timed Trendelenburg position for an abdominal operation, woke up after the operation with an evident paralysis of both arms. Fortunately the patient soon recovered the use of his arms which had suffered from too long compression of the brachial plexus and subclavian vessels on both sides, by the metallic braces used to keep the patient from sliding off the inclined plane of the Trendelenburg table. This alarming accident could have been avoided by merely padding the supporting braces with soft pillows.

As one of the earliest pioneers in intralaryngeal anesthesia for intrathoracic operations, I am proud of the great and ever greater achievements of thoracic surgery; and no one can question the indispensable utility of intratracheal intubation in dealing with all operations that make an open thorax compulsory.

But the use of the intratracheal tube by the nasopharyngeal route is no trifle since it adds a complicating and often traumatizing procedure to an anesthesia which, in itself, is often provocative of serious complications. And yet, intralaryngeal anesthesia is increasingly used and abused for extrathoracic operations in which it is not specifically indicated; too often for the convenience of the operator and the anesthetist in keeping the anesthetist out of the operating field (plastic operations of the face, oral and maxillary surgery; surgery of the neck, goitre); also in abdominal and pelvic operations in anticipation of respiratory and cardiovascular complications (solely to keep an open and direct way to the lungs)—when such fears are largely hypothetical. Thus it happens that the prophylactic intubations, in the end, serve no special purpose but to teach the unskilled or to exhibit the dexterity of the anesthetist and the alleged "simplicity" of the procedure.

These comments and criticism are not made in opposition or condemnation of intralaryngeal anesthesia when this is applied to meet its specific and legitimate indications, but are directed to its abuse by those who see little of the mischief that follows its uncalled and indiscriminate application.

Personally speaking, I have been particularly favored by having qualified medical graduate anesthetists, of the highest competence, attached to my service during the half century of active surgical practice and teaching, and I have known—through it all—the great luxury and vast comfort that the surgeon experiences in his work when he knows that the man at the anesthetic end is vigilant, able, in sympathy with its work and conscious, all the way through, that his anesthetist is sharing with him the responsibilities of his work. At least, he knows that the anesthetist is watching for the safety of the patient, so that he, the surgeon, may be free to concentrate his best efforts, with a minimum of worry, on the details of the operation that is to bring success to the enterprise and satisfaction to all concerned.

Since anesthesia has become so entrenched in its domain that the anesthetist operates his batteries of gases and gadgets of safety, behind a screen, his vision has been virtually excluded from a view of the operator and the operating field. In this way, the close personal and technical relation that bound the operator and the anesthetist in the days of plain ether and chloroform, have become less intimate and less sensitive to the unity of command.

It is also to be noted that with the greater complexity and variety in the modes of anesthesia that the anesthetist is called upon to perform (quite apart from the inhalation and intravenous anesthesias), spinal, caudal, splanchnic, paravertebral and other varieties of local and regional analgesia, the authority and independence of the anesthetist is becoming more apparent; not only in the old role of simple assistant and coadjutor, but as a director and controller of all that concerns the anesthetic field.

In this gradual transition from the simple to the complex, modern anesthesia or "anesthesiology," may be compared to a state with many subdivisions, each independent of the other in the cultivation of its own industries and resources (for example, local and spinal anesthesia; inhalation narcosis, ether, gas-oxygen), but all united in a common cause—the abolition of pain.

Dr. Adriani (In closing): I feel honored in having this presentation discussed by a man whose name appears so frequently in the history of the development of anesthesia. We all know Dr. Matas has been interested in developing methods of anesthesia. The first spinal anesthesia given in the United States was given by Dr. Matas.

The remarks Dr. Matas made about over-confidence of anesthetists unfortunately are true. Every now and then when we are successful over a continued period of time we assume we are infallible. Then something happens and we are temporarily cured. I cannot say how we are going to avoid that. The question of the training an anesthetist has had is important. If we are not familiar with the hazards of anesthesia we are more inclined to be overconfident than if we are aware of the dangers of these drugs we use. The dangers of cyclopropane, as I pointed out, are well known to and emphasized by the men who introduced and have studied the drug pharmacologically. Those who are well versed in the effects of these drugs are inclined to be more cautious in their use.

Intratracheal anesthesia has been a subject of concern for a long time. It is a godsend as far as surgery is concerned because it allows us to do certain types of surgery which otherwise would be impossible. Head and neck surgery and thoracic surgery would be practically impossible without intratracheal anesthesia. However, the technic is, as Dr. Matas has pointed out, abused. There is a certain hazard attached to introduction of the catheter. Trauma results even in the hands of skilled individuals. The introduction of an intratracheal tube when the airway is good and one could do without it is not good practice. In some cases intratracheal anesthesia is imperative and the risk is part of the operation. There is a tendency, unfortunately, for inexperienced individuals to insist upon doing intratracheal anesthesia. I feel no one but a physician should introduce an intratracheal tube. We would be horrified at letting a nurse perform a bronchoscopy. Still the hazards of introducing an intratracheal tube are equally as great as introducing a bronchoscope. Some physicians expect nurses to be trained to do this. I do not even feel that all physicians should do laryngoscopies. The M. D. degree does not necessarily infer that one possesses the necessary skill for this type of endoscope. Intubation should be done only by an individual trained in laryngoscopy and by one who is familiar with anatomy as well as the hazards of intratracheal anesthesia. I am glad Dr. Matas emphasized the abuse of intratracheal anesthesia. Intratracheal intubation is not a procedure to be done by nurses or interns who are learning anesthesia. It is a procedure that should be taught to and done by physicians who devote their full time to anesthesiology.

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A TUBERCULOSIS SURVEY IN NEW ORLEANS

CHESTER A. STEWART, M.D.†
NEW ORLEANS

In October, 1943, a tuberculosis case finding survey, which included tuberculin testing as well as 35 mm. photofluorographic examinations, was launched in New Orleans. This contribution to the control of tuberculosis was made possible through the cooperation of Charity Hospital, the City and State Health Departments, the New Orleans Tuberculosis Association, and the Department of Pediatrics of Louisiana State University.

The general program provided for the routine tuberculin testing of patients attending the prenatal, medicine, and venereal disease clinics at Charity Hospital. In addition the nurses and employees of Charity Hospital, the infants, children and attendants in a few local orphanages, and school children attending some of our parochial schools were included in the survey. The New Orleans Tuberculosis Association, which derives its funds from the sale of the Christmas seal, paid the salaries of the graduate nurse and x-ray technician who participated in the program. In applying the Mantoux test a routine intradermal injection of 0.1 mg. of old tuberculin, purchased from the Saranac Laboratories, was employed. The reaction to tuberculin was recorded at the time the photofluorographic examinations were made.

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The educational feature of the program consisted partly in distributing informative brochures, pamphlets and folders to the individuals included in this survey. This literature was obtained from the National Tuberculosis Association and was distributed gratis by the Orleans Tuberculosis Association. The tuberculin test also had distinct educational value. It gave these patients an acquaintance with the most dependable procedure available for determining whether or not an individual has been infected with tubercle bacilli; and furthermore, each positive reaction to tuberculin provided the individual concerned with concrete visible evidence that the subsequent periodic reexaminations which were recommended were justified. In general the entire program demonstrated to several thousand people one of the best methods now available for detecting and controlling tuberculosis on a comprehensive scale.

The results of the examination were recorded in triplicate copies of which one was filed with the City Health Department, one was kept at the pediatric office at Louisiana State University, and the third was incorporated in the patient's hospital chart. Thus the information provided by the third copy was made available to the attending physicians who completed the diagnosis and made provision for whatever therapy was indicated.

A few months after the program was launched it spread beyond the limits of New Orleans to include the students attending Louisiana State University and several of the colleges scattered widely throughout the state. This expansion of the campaign was aided by the Louisiana State Tuberculosis Association and received splendid cooperation from the presidents and faculties of the various colleges concerned.

Between October, 1943, and July, 1945, more than 20,000 individuals were examined for tuberculosis as the result of this survey. Photofluorographic studies were made on the entire group but several thousand individuals failed to submit to the tuberculin test. This report deals with the preliminary survey records of 8,571 persons who received the Mantoux test as well as the photofluorographic examination.

The results of the tuberculin tests applied to white and colored individuals at different ages are recorded in table 1. The averages show that at corresponding ages

TABLE 1.
THE INCIDENCE OF SENSITIVITY TO OLD TUBERCULIN AND OF NORMAL LUNGS IN DIFFERENT AGE GROUPS

	WHITE				COLORED			
Age Group (Yrs.)	Total Number Tested and X-rayed	Sensitive to 0.1 mg. Old Tuberculin		Lungs Normal	Total Number Tested and X-rayed	Sensitive to 0.1 mg. Old Tuberculin		Lungs Normal
		Number	Per cent	Per cent		Number	Per cent	Per cent
0-4	29	5	17.2	100.0	69	4	5.7	100.0
5-9	81	10	12.3	100.0	71	16	22.5	100.0
10-14	428	74	17.3	98.8	302	67	22.2	99.7
15-19	746	186	24.9	98.0	1413	483	34.2	98.4
20-24	519	132	25.4	98.1	959	422	44.0	97.4
25-29	177	78	44.1	93.8	677	341	50.4	97.2
30-34	156	67	42.9	96.8	522	310	59.4	95.6
35-39	156	70	44.9	96.8	436	256	58.7	96.1
40-44	129	64	49.6	91.5	273	171	62.9	94.5
45-49	145	72	49.6	94.5	238	156	65.5	92.0
50-54	131	57	43.5	90.9	172	95	55.2	92.4
55-59	108	52	48.1	88.0	151	86	57.0	89.4
60-64	99	52	52.5	79.8	113	65	57.5	88.5
65-69	77	38	49.4	79.2	92	38	41.3	90.2
70×	65	24	36.9	73.8	37	17	45.9	83.8
Total	3046	981	32.3		5525	2527	45.7	

throughout practically the entire span of life the incidence of individuals who were infected with tubercle bacilli was distinctly higher in the local colored race than it was in the local white race. In each of these racial groups the per cent of positive reactors to tuberculin apparently reached its respective maximum level between the ages of 40 and 50 years, but the maximum level for each race was far short of 100 per cent. The colored patients included in this study represent chiefly the lower socio-economic level of the local negro population, and in this sample of the race the incidence of sensitivity to old tuberculin reached a peak of 65.5 per cent between the ages of 45 and 49 years. During 1944 the tuberculosis death rate for the colored population of New Orleans was 103.6, but in spite of this situation practically one-third of the most heavily infected age group failed to react positive to 0.1 mg. of old tuberculin. Retesting with large doses of tuberculin would unquestionably have detected the presence of infection in many who reacted negative to 0.1 mg. but I doubt if this procedure would have raised the incidence of positive reactions much above 80 per cent for this age group. It seems reasonable to believe, therefore, that even among individuals representing the lower socio-economic level of a race with an exceptionally high current tuberculosis death rate the incidence of infection is by no means as universal as it was generally claimed to be a few decades ago. Studies designed to test the validity of this speculation are in progress at Charity Hospital.

The data in table 1 show that the heavier burden of infection carried by the local colored as compared with local white race extends practically throughout the entire span of life. According to the records of the New Orleans Health Department the tuberculosis death rate in 1944 was 35.2 and 103.6 for our white and colored population groups, respectively. These observations suggest that the relatively heavy and protracted burden of infection borne by negroes is one of the factors which contributes to the high tuberculosis death rate experienced by this race, and that the protective immunity which some investigators attribute to an infection with tubercle bacilli certainly fails to provide the colored race with adequate protection from the ravages of the disease. Without doubt the benefits the white and colored races can derive from preventing infection with tubercle bacilli far outweigh any protection that results from acquired infections.

The incidence of individuals with lungs which were considered to be normal is also recorded in table 1. This tabulation of the

TABLE 2.

INCIDENCE OF PULMONARY AND PLEURAL CHANGES FOUND ON INITIAL EXAMINATION OF NEGATIVE REACTORS TO TUBERCULIN

Age Groups (Yrs.)	Number Negative to 0.1 mg. Old Tuberculin		Calcifications Per cent		Changes in Lungs and Pleura: Parenchymal Infiltrations Per cent		Pleural Changes Per cent		Tumors Per cent	
	White	Colored	White	Colored	White	Colored	White	Colored	Colored	White
0-4	24	65								
5-9	71	55								
10-14	354	235	1.1	0.4						
15-19	560	930	1.4	1.4					0.2	
20-24	387	537	1.6	2.2	0.8	0.2				
25-29	99	336	5.1	2.4	1.0	0.9				
30-34	89	212	3.4	3.3		0.5				
35-39	86	180	3.5	3.9	1.2	0.6		1.1		0.6
40-44	65	102	7.7	7.8	1.5	1.0				
45-49	73	82	2.7	8.5	2.7	2.4				1.2
50-54	74	77	5.4	3.9	1.4	3.9				1.3
55-59	56	65	3.6	7.7	8.9	1.5				
60-64	47	48	4.3	6.3	6.4		2.1	2.1		4.2
65-69	39	54	17.9		7.7	1.9				
70	41	20	17.1	10.0	17.1					

data reveals a tendency for the incidence of normal lungs, as determined by photofluorographic studies, to decline in each racial group as age progresses. It also shows that throughout life the individuals with roentgenographically normal lungs greatly outnumber those with abnormal lungs. In addition the data disclose no significant difference between white and colored patients of corresponding age with respect to the incidence of apparently normal lungs in each race.

The pulmonary and pleural changes disclosed by photofluorographic examination of the negative and positive reactors at different ages in each racial groups are recorded in tables 2 and 3. Lesions interpreted as calcifications made their appearance between the ages of 10 and 20 years in the positive and negative tuberculin reactors of each racial group and their incidence tended in general to average slightly higher in the older than in the younger age groups. In general the lesions of this type were not numerous and their incidence at corresponding ages displayed nothing which would be attributed to differences either in race or in character of reaction to tuberculin. The incidence of calcifications for all ages combined amounted to 2.7 and 3.2 per cent respectively for the white negative and positive reactors to tuberculin and to 2.4 and 2.8 per cent respectively for the colored negative and positive reactors to tuberculin.

Parenchymal infiltrations were reported in 103 instances or in 1.2 per cent of the total group included in the survey, and in general the incidence of lesions of this character averaged slightly higher in the infected than in the uninfected members of each race. Also, the parenchymal infiltrations were encountered more frequently in the older than they were in the younger age groups.

On the basis of the preliminary survey practically all of these pulmonary infiltrations were considered to be tuberculous in origin. Follow-up studies which are still incomplete have disclosed that several of these lesions represented areas of pneumonia. Many of the remaining lesions were eventually proved to be tuberculous. In general the study demonstrated that the photofluorographic survey was of value in detecting pulmonary lesions but subsequent investigations were needed for accuracy in diagnosis.

Pleural changes and lesions interpreted as neoplasms were found in a few instances (tables 2 and 3). Lesions of these types appeared in individuals beyond the age of 14 years, and in no age group was their incidence very high.

TABLE 3.

INCIDENCE OF PULMONARY AND PLEURAL CHANGES FOUND ON INITIAL EXAMINATION OF POSITIVE REACTORS TO TUBERCULIN

Age Group (Yrs.)	Number Sensitive to 0.1 mg. Old Tuberculin		Changes in Lungs: Calcifications Per cent		Parenchymal Infiltrations Per cent		Pleural Changes Per cent		Tumors Per cent	
	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored
0-4	5	4								
5-9	10	16								
10-14	74	67	1.4							
15-19	186	483	1.6	1.6	1.5	0.2		0.2		
20-24	132	422	0.8	2.6		0.2				
25-29	78	341	2.6	2.9	3.8	0.6		0.3		
30-34	67	310	1.5	2.9	1.5	1.9		0.3		
35-39	70	256	1.4	1.6		0.8				
40-44	64	171	4.7	2.9	3.1	1.8				0.6
45-49	72	156	1.4	3.2	2.8	1.9			1.4	
50-54	57	95	3.5	4.2	7.0	2.1	1.8			2.1
55-59	52	86	7.7	8.1	3.8	3.5				
60-64	52	65	17.3	4.6	9.6	4.6				1.5
65-69	38	38	2.6	15.8	15.8	5.3				
70×	24	17	8.3		4.2	23.5				

Observations on the heart and aorta are recorded in table 4, in which the averages are listed on the basis of group, age and race. Since no evidence was found suggesting that infection with the tubercle bacilli was correlated with changes in heart and aorta no separation of the data on the basis of the character of the reaction to tuberculin is made in this tabuation.

TABLE 4.

INCIDENCE OF ENLARGEMENT OF THE HEART AND OF THE AORTA FOUND ON THE INITIAL EXAMINATION

Age Group (Yrs.)	Total Number Tested and X-rayed		Changes in Heart and Aorta			
			Enlarged Heart Per cent		Enlarged Aorta Per cent	
	White	Colored	White	Colored	White	Colored
0-4	29	69				
5-9	81	71		1.4		
10-14	428	302		0.3		
15-19	746	1413	0.5	2.1		0.2
20-24	519	959	2.5	7.0	0.4	0.9
25-29	177	677	4.0	8.9	1.1	1.2
30-34	156	522	2.0	11.9	1.3	3.6
35-39	156	436	7.7	12.8	1.9	7.6
40-44	129	273	10.1	20.9	5.4	11.7
45-49	145	238	16.6	33.6	9.7	19.3
50-54	131	172	16.8	40.7	12.2	28.5
55-59	108	151	21.3	46.4	19.4	40.4
60-64	99	113	32.3	48.7	28.3	44.2
65-69	77	92	39.0	45.7	26.0	35.9
70+	65	37	46.2	51.4	41.5	59.5

In this study cardiac enlargement made its appearance at an earlier age in the colored than it did in the white patients, and in each race the incidence of this abnormality displayed a progressive increase with advancing group age. After the conclusion of the second decade of life the per cent of patients in each race with cardiac enlargement greatly outnumbered those of corresponding group age and race with photofluorographic evidence of abnormal pulmonary changes. Furthermore, at corresponding ages the incidence of enlarged hearts in colored patients was consistently higher than it was in white patients.

Enlargement of the aorta which in many instances had resulted in the production of aneurysms, was found in each race with progressively increasing frequency as group age advanced (table 4). On comparing the observations on the two races it is obvious that at corresponding group ages the incidence of aortic enlargement was distinctly and consistently higher in the colored patients than it was in the white patients. This difference between the two races as well as that with respect to cardiac enlargement may be due in part to the relatively high incidence of syphilis in the colored patients.

SUMMARY

The results of tuberculin testing and photofluorographic examination of 8,571 patients are summarized.

Tuberculin testing of individuals representing the lower socio-economic level in New Orleans and vicinity disclosed that throughout the entire span of life the local poor colored population carries a heavier burden of tuberculous infection than does the local poor white population.

This difference between the two groups roughly parallels that existing between their respective current tuberculosis death rates which during 1944 amounted to 103.6 for the colored race and to 35.2 for the white race.

The photofluorographic study resulted in the discovery of pulmonary infiltrations in 103 patients. A tentative initial diagnosis of probable tuberculosis was made in practically all of these cases. Subsequent studies confirmed many but not all of these initial diagnoses.

Cardiac and aortic enlargement constituted the abnormal findings discovered with greatest frequency by photofluorographic examinations. These changes were more prevalent in the colored than in the white patients, and this difference between the two races was attributed to the relatively higher incidence of syphilis in the colored patients.

By recording the results of this survey a record is established which may eventually aid future investigators in detecting the trend of the local tuberculous infection attack rate, as well as changes in the incidence of abnormalities of the heart and aorta.

A REPORT ON TERMINAL OBSTETRICAL ANESTHESIA USING LOW SPINAL BLOCK

A. L. CULPEPPER, M. D.
ALEXANDRIA, LA.

Although several carefully controlled series have been reported favorably, spinal anesthesia in obstetrics has not enjoyed wide usage. Moreover, anesthetists who use tremendous doses in caudal anesthesia and who recognize the mortality and the technical difficulties associated with its use, continue to condemn the simple process and tiny dose required in low lumbar spinal block. Further, some who willingly accept continuous spinal reject regular spinal, apparently ignoring the fact that any one of the multiple doses will provide excellent terminal obstetrical anesthesia. Since we now have the demerol and scopolamine combination, which provides such excellent analgesia, I feel that we really need nothing more than minimal terminal anesthesia.

I have used procaine hydrochloride in 150 cases, giving 50 or 60 mg. in the third or fourth lumbar interspace. The technic is simplified by using ampules containing a 10 per cent solution. Thus ½ c.c. diluted with ½ c.c. of spinal fluid provides 1 c.c. of 5 per cent solution for injection with no barbotage. In primiparae, it should be administered only after complete cervical dilatation, whereas, in multiparae, it is best given when the cervix is not quite dilated. The effect is almost immediate cessation of pain, though uterine contractions continue. The entire pelvic canal and perineum relax and labor is terminated quickly and easily.

Due to less voluntary straining there are fewer cervical and perineal lacerations. The height of anesthesia should reach almost to the umbilicus and the duration up to one and a half hours. This is surprising, but I have repaired the perineum on several occasions an hour and a half after the injection. Manual rotation of the head is very simply accomplished due to relaxation and seems to be required more frequently for the same reason. Forceps application is less often necessary and is made much easier. Blood loss is definitely less, the placenta separates quickly as a rule, and the uterus contracts as well or better than with general anesthesia. The immediate cry of the newlyborn is very gratifying. The mother withstands this procedure smilingly, without exception. An anesthetist has been especially attentive to this small but closely observed series of cases and reports that the blood pressure, pulse, and respiration, which are checked constantly, vary negligibly.

There have been no complete failures but in three cases anesthesia reached only to the pubis. As all three of these patients had marked spinal lordosis, apparently the injection should have been given in a higher interspace.

During my past eleven years in private practice, I have suffered the common dilemma of wishing to make labor easier, while realizing that risk and danger attend any and all obstetrical anesthesia. I have found that after effective demerol-scopolamine analgesia a small, carefully controlled, low lumbar spinal injection as terminal anesthetic is infinitely more satisfactory than any other method I have tried or witnessed, in that, while making the job easier for the physician, it not only provides effective anesthesia but also affords greater safety for mother and child.

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THE ANNUAL MEETING

It has been decided that the annual meeting of the Louisiana State Medical Society will be held in Alexandria, April 29, 30 and May 1, 1946.

Every Louisiana physician who is a member of organized medicine should attend this meeting. It will be the first real representative meeting that has been held since the war started. There will be a host of problems that will have to be discussed by the delegates and by the members of the organization. Furthermore for the first time in five years we will have the opportunity of getting together with our old friends, seeing them and talking with them. Of course the importance of the scientific session must not be overlooked because many of us have become rusty as result of the terrific demand upon our time and energy through war time exigencies.

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THE TRUMAN HEALTH BILL

On November 19 President Truman presented a health bill to Congress which he contends is of number one importance in the legislative agenda. The Truman Bill as it is presented soft soaps and sugar covers the socialization of medicine. The President does not call his bill socialization nor does he say that there will be any disturbance of a physician-patient relationship; all this is in the mind of the average medical man largely if not totally fallacious. In the five point plan that the President suggests certainly point number four, to wit compulsory health insurance, is the very thing that is imbued in the Wagner-Murray-Dingell Bills which the medical profession has strenuously objected to over a period of some years.

Other features in the five point plan of the President are certainly not to be considered in the same category as is number four. Most of the medical profession will agree that: (1) there should be increased Federal aid for the construction of hospitals, (2) that the public health and maternal and child health service might well be expanded, (3) that there should be increased funds for education and research for the medical profession and (5) that disability insurance is not a bad thing, but the fourth point, the compulsory health insurance feature of President Truman's suggested legislation is the particular one that is likely to make the doctor gag. The arguments against compulsory health insurance have been repeatedly reiterated and restated. The reasons that doctors do not like compulsory health insurance are so very obvious that the physicians should have the support of thinking and intelligent people in their community and in their state in fighting federal supported medical regimentation. This bill is definitely a first step towards socialism. If the doctors are going to be regimented and put under bureaucratic control other professions will follow and business will go through exactly the same procedure so that ultimately the democracy of this country will be drowned in the sea of socialism.

Untold billions are being asked of Congress for the financing of the national debt, for the maintenance of a large standing Army, for the care of the veteran and for other necessary and not to be controverted demands. Why should the people of this country be taxed three billion dollars more for a program, the necessity and need for which has never been shown and which is certainly not demanded in this country by more than a relatively small but most vociferous group of people? The medical profession should fight the new program as it has never fought before. They should get back of the leadership of the American Medical Association and establish statewide voluntary sickness insurance plans which should be the responsibility of the medical profession and not of a Washington bureaucracy.

BARBITURATES IN OBSTETRICS

The advantages and disadvantages of the use of the barbiturates in obstetrics are discussed and evaluated in a recent article by Frederick C. Irving.* The records of 14,676 cases at the Boston Lying-in Hospital were examined. The barbiturates and scopolamine produced satisfactory amnesia in 85 per cent of the cases, while demerol and scopolamine did so in 70 per cent. Respiratory complications were more numerous with barbiturates and scopolamine than with demerol and scopolamine. It is recommended that the barbiturates not be used when the patient has recently eaten or has an upper respiratory infection because of the loss of pharyngeal reflexes. Pentobarbital was found to produce more respiratory reactions than did seconal or sodium amytal alone or together.

Demerol rarely depresses respiration and is safer for routine use in a large clinic. Since barbiturates and scopolamine may produce excitement, demerol in doses of 100 mg. intramuscularly may be used to control it.

Scopolamine was thought ideal for the production of amnesia. With the use of a general anesthetic at delivery about 62 per cent of the babies may be expected to breathe immediately with the barbiturates and scopolamine, while 82 per cent breathe immediately when demerol and scopolamine are used.

ORAL PENICILLIN

And now a further step in the treatment of infections with the valuable mold, penicillin. Several preparations of oral penicillin are being offered by many pharmaceutical houses. The advantages of the oral administration over the parenteral route are apparent, including convenience, avoidance of prolonged hospitalization, relief from injections over a long period of time allowing extended use of the drug. It will probably also be valuable as a prophylaxis and as treatment of carriers of certain organisms.

As pointed out by Rammelkamp and Helm[1] the greatest obstacle to the use of penicillin by mouth was the fact that gastric acidity destroyed its effectiveness. Other studies by Rammelkamp and Keefer[2] showed that sodium bicarbonate was unsatisfactory as a buffer because excessive alkali was also undesirable. Charney, Alburn and Bernhart[3] early in this year found that sodium phosphate, sodium citrate or alumina gel were satisfactory buffers, and the oral preparations use one or the other of these in its present form.

The dosage of oral penicillin is stated to be three or four times that of the parenteral dose. In acute infections initial therapy is begun with injections of penicillin and continued until fever begins to subside. Oral penicillin may then be substituted. As a prophylaxis in tonsillectomy or tooth extraction under certain conditions the oral penicillin may be used for a day or two before and several days after the procedure. Its use has also been recommended in acute gonorrhea, minor upper respiratory infections of various types and in the continuance of penicillin therapy in bacteremia and septicemia after parenteral penicillin has produced a negative blood culture.

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*Irving, F. C.: Rhode Island M. J., 28:493-495, 1945.

The uses, indications and contraindications will be the subject of much further study and these conclusions will be awaited with interest. Another step has been taken in this new field of chemotherapy.

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ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

1946 ANNUAL MEETING

An invitation extended by the Rapides Parish Medical Society has been accepted and the Louisiana State Medical Society will hold the 1946 Annual Meeting in Alexandria on April 29, 30 and May 1. It is earnestly requested that all members of component societies make plans to be with the State Society on this occasion. We are especially desirous of making this meeting a momentous one and are designating it as a "Victory Meeting". Unquestionably many of our members who have served in the military forces for several years, will be glad of the opportunity to participate in the meeting and to fraternize with their many friends in the medical profession. It is especially our desire to extend to them a sincere invitation to be with us at the 1946 meeting.

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REPORT OF SECRETARY-TREASURER ON RECENT TRIP TO CHICAGO BEFORE AND INCLUDING ANNUAL MEETING OF HOUSE OF DELEGATES OF A. M. A.

On November 30 and December 1 there was held at the headquarters of the A. M. A. a meeting on prepayment medical insurance on a national voluntary basis. After an all day discussion of this subject on the first day, on December 1 results of the discussion were crystallized and appropriate resolutions were drawn up for presentation by the Committee on Medical Care and Public Relations to the House of Delegates of the A. M. A. on December 3. Some of the highlights of these resolutions are as follows: That the House of Delegates authorize the development of a national voluntary prepayment medical plan; first, for the purpose of assisting local plans in handling national enrollment groups and, second, to serve until such time as all states have their own plans. It was also resolved that the American Medical Association's Council on Medical Service and Public Relations be instructed by the House of Delegates to take immediate steps to coordinate the activities of all prepayment medical care plans now in operation; foster the development of such plans in those areas where there are none, and educate physicians and the public as to the functions of voluntary prepayment plans and the need for supporting them. It was further resolved, that the officers and committees of every state medical society be urged by the House of Delegates to secure prompt action by their

State Society in inaugurating new, or increasing the benefits of existing prepayment medical care programs in every state.

On the afternoon of December 1, there was held a meeting of the editors and general managers of the various state medical journals which participate in the Cooperative Medical Advertising Bureau. This was held at the Continental Hotel and the various state journals were very well represented. The meeting was called at the request of members of the Advisory Committee who wished to adjust some differences which had developed with the Board of Trustees of the A. M. A. in regard to certain journals of the group continuing to carry a number of pages of advertising monthly in their journals which do not meet the standards of the Bureau. The Board of Trustees had previously suggested that the service of the Bureau would be discontinued unless these differences were adjusted.

As a result of this meeting there was a conference held with the Board of Trustees at ten o'clock on the morning of December 2, at the Palmer House. Suffice it to say, the Board of Trustees brought in such a satisfactory report of reorganization of the Bureau as to meet almost entirely the demands of the editors and the general managers. We feel that the activities and services of the Cooperative Medical Advertising Bureau will not only continue on a high basis but will be even more satisfactory in the future. Mr. Alfred J. Jackson, who has had a long and faithful service with the A. M. A., has been secured as the new director of the Bureau and will begin his duties in this capacity on January 1.

At two-thirty on the afternoon of December 2, I attended by invitation a conference at the Continental Hotel of presidents of the various state medical societies. This was a very impressive gathering and there were on the program many outstanding thinkers of the present day including medical and lay individuals. Many pertinent topics were discussed, such as the national health program which is to be participated in by the various state medical societies of the United States. Mr. Arthur J. Altmeyer, of the Social Security Board, spoke at great length on "How Can We Assure Adequate Health Service for All the People?" His argument was purely from the standpoint of the security benefits and only in an irrelevant way with the problems which will confront the medical profession. He placed emphasis almost entirely upon providing adequate medical service from the "cradle to the grave". He cited statistics from various bureaus to confirm his position. He thinks, he stated, that medical service should be decentralized and there should be a choice of physicians and a free choice of patients. Also that the programs of the various states could be integrated with a national plan and he outlined how this could be done on a capitation basis which would allow for adequate payment for physicians for services rendered. There were a number of resolutions introduced following Mr. Altmeyer's address in relation to medical insurance and how the medical profession can meet the present crisis.

Dr. Joseph H. Howard, President of the Connecticut State Medical Society, spoke on "Expansion of Voluntary Group Health Care Programs" especially in reference to his state. He seems to think that it is essential to have a good voluntary medical service plan in every state and that the time for action is now. He quoted from Al Smith: "You can't get somebody with nobody".

Dr. Philip K. Gilman, President of the California Medical Association, reported on the recent problems and trouble in that state in relation to legislation which was introduced to place medicine under the control of the state. With a great deal of effort on the part of the medical profession and hard work on the part of their legislative groups, they were able to defeat these pernicious bills. He sounded a warning that this was simply a beginning and that other states might look for similar legislation in the near future. He feels that young doctors and practitioners of medicine should take a more active and interested part in this great fight since, from his experience in California, the job was very taxing on the members of the profession. They really ran into a "baptism of fire" and evidently a great many of them were scorched in the process. They have determined to be vigilant and have raised the dues in the state and some of the larger cities of California in order to keep a healthy surplus in the treasury to meet any contingencies which might arise in the future. ($100.00 state dues).

Dr. O. O. Miller, of Louisville, Past President of the Kentucky State Medical Association, presented some conceptions on "Modern Medical Public Relations". He gave four outstanding principles which should guide our public relations in obtaining the best results: First, honesty in public relations; second, medical men of prominence and influence participating in pronouncements against the socialized program as recently presented by the President and implemented by Senator Wagner and Representative Dingell; third, state societies should have a separate, full-time public relations agency or person; fourth, cooperation with other states in their program when advisable. In other words, unity of action.

Mr. John F. Hunt, of Chicago, Vice-President of Foote, Cone and Belding, gave some practical reasons for supporting the National Health Congress. This proposed group would be composed of representatives from medicine, dentistry, pharmacy, nursing, social work, industry, labor, religious and fraternal groups and any other organizations which have any remote interest in supporting a national health program.

The evening of the second was devoted to the presidents' reception, the Michigan State Medical Society being host. The entire program was under the general sponsorship of the California Medical Association and the Michigan State Medical Society.

On December 3-6 there was held a meeting of the House of Delegates of the A. M. A. at the Palmer House. Opportunity was given for personal contact and observation of the workings of this great medical organization. Many of the innovations of this group are most practical and should be adopted by large medical societies which have a tremendous amount of detail and work to attend to in their House of Delegates. Most of the work of the A. M. A. House of Delegates is performed through reference committees. Before the meeting a handbook is prepared with all the reports of officers, standing and special committees. These reference committees then have hearings and before adjournment of the House of Delegates bring in either partial or full report of all matters which have been referred to them for consideration, subject to approval or disapproval by the members of the House. At this time the delegates are permitted to discuss and deliberate on the pros and cons of the recommendations of the reference committees. Most of the first day is therefore consumed with placing in the hands of the reference committees the various reports received. On the following days these reports are passed upon.

A complete review of the proceedings of the House of Delegates will appear in the Journal of the A. M. A. from time to time, however I would like to mention in this report a few highlights of the meeting, as follows:

It was voted to recommend transfer of the Children's Bureau to the Federal Security Administration until Congress can create a special bureau for all health activities.

There was considerable discussion in regard to the functions of the editor of the A. M. A. Journal in reference to official duties. No changes, however, were deemed advisable at present due to the grave crisis now confronting the medical profession from a national viewpoint.

It was recommended also that the National Tuberculosis Association dispense with the sale of tuberculosis seals because it was felt that this organization has sufficient money in their funds and the appeal would increase their income unnecessarily.

It was voted to recommend to the chiefs of the various military forces that the discharge of veterans on the present plan, granting them a terminal leave of three months, be superseded by giving them a discharge with three months' pay. The argument for this was that the present plan interferes with the privileges granted to these men under the GI Bill of Rights to take up immediately after their severance from service in the military forces the privileges to which they are entitled.

Also approved was the liberalization of present standards by the Committee on Hospitals and Medical Education which will make more hospitals available for internships and residencies.

It was voted also to approve the policy of more rapid discharge of medical officers from the military forces. Copies of this action were to be sent to the Surgeons General of the Army and Navy and other governmental officers.

Action was also taken to restore fellowship to those doctors of the military forces whose names were dropped from the A. M. A. during the war for non-payment of fellowship dues.

The gift of the Red Cross of surplus blood plasma from the war, was accepted. This will be distributed through the Boards of Health in cooperation with state medical societies, and state hospital associations, to those hospitals or services in need of plasma.

The profession was admonished to support the "Keep Fit Foundation" which is being established in the various states.

Announcement was made that the manufacturers of high frequency machines for medical service will maintain the present bands to keep out interference with government radio.

The House at this meeting also reaffirmed endorsement of the National Physicians Committee.

The Woman's Auxiliary to the various state medical societies has been asked to sponsor suitable propaganda to help defeat measures for the federalization of medicine. It was also asked that all state societies use their influence through radio, newspapers and otherwise, to circulate information to the public concerning the harmful effects to them of federalization of medicine.

The promiscuous prescribing of narcotics by telephone was disapproved and it was stated that this should be limited to absolute emergencies.

The EMIC Bill, known as Senate Bill 1318, was heartily disapproved.

In discussing the cancer problem, a resolution was passed that detection clinics throughout the states should not diagnose or treat cases and that no detection clinic should be organized without approval of the county medical society; also that such clinics should meet the standards set up by the American College of Surgeons.

The plan to proceed at once to consolidate the various voluntary prepayment medical service plans throughout the United States was approved and authority was given the Board of Trustees and Council on Medical Service and Public Relations of the A. M. A. to institute a national health insurance program.

Action was also taken to reaffirm the position of organized medicine to cooperate with all other agencies in an effort to improve the national health and provide adequate medical service. This was referred to the Trustees and the Council on Medical Service and Public Relations for implementation.

House Bill 4717, which creates a department of medicine and surgery in the Veterans Administration and proposes also to use services of osteopaths, was discussed but no action taken.

It was suggested that each state appoint a congressional committee for the purpose of supervising propaganda in regard to national legislative matters.

The suggestion that a suitable committee be appointed to prepare an amendment to the Constitution of the A. M. A. to provide for two meetings a year of the House of Delegates, was endorsed.

Disapproval was expressed of any liberalization of the present form of licensure of physicians to meet the demands of House Bill 2969 which provides for the granting of reciprocity to physicians being discharged from military service.

The House of Delegates was addressed by the distinguished Dr. Tom Roundtree, Secretary of the Canadian Medical Association. From his address it would appear that Canada is confronted with the same problems which are now before the medical profession of the United States as a result of the war.

One of the finest addresses before the House of Delegates was made by Major General Hawley, Medical Director of the Veterans Administration in Washington, D. C. He spoke at great length on the reorganization of the medical department of this Bureau and he stated that he proposes first to see that the veterans receive the best medical care available in the United States. This, he said, was his only commitment when taking over this appointment. He plans to use a full time staff and to locate veteran hospitals in areas surrounding medical centers, using also beds in private or existing hospitals and part-time physicians now employed in medical schools. He will also, he stated, give preference to the young physicians returning from military service and is desirous of establishing residencies and internships in veteran hospitals, which is something that has not been done in the past. He promised that if he is unable to get the highest medical service from these plans he will give up his position. General Hawley has been in the regular army service for twenty years and is a great believer in the high standards and efficiency or organized medicine.

The A. M. A. is making plans to celebrate the centennial anniversary of the organization at Atlantic City in 1947 and a committee was appointed to implement same.

It was decided that the next meeting will be held July 1-6, 1946 in San Francisco.

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LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of very month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

EAST AND WEST FELICIANA BI-PARISH MEDICAL SOCIETY

The Bi-Parish Medical Society met in Hudnall's Cafe on December 5. After an excellent meal, served by Mr. and Mrs. Hudnall, the Society convened at the Clinton Infirmary for a business and scientific program.

Officers elected for 1946 are as follows: Dr. W. E. Wilkinson, President; Dr. Paul Jackson, Vice-President; Dr. E. M. Toler, Secretary-Treasurer and Delegate; Dr. E. M. Robards, Alternate.

Dr. Frank Jones and Dr. Albritton were elected honorary members and Dr. Paul Jackson was elected an active member of the society.

Dr. Tom Spec Jones, of Baton Rouge, read a most excellent and instructive paper on congenital hypertrophic pyloric stenosis. Dr. M. A. Walker, also of Baton Rouge, read an interesting paper on intestinal obstruction.

A vote of thanks was extended to Drs. Jones and Walker for their timely papers and a motion was made and adopted that Dr. Jones' paper on congenital hypertrophic pyloric stenosis be submitted for publication in the New Orleans Medical and Surgical Journal, Southern Medical Journal or the Journal of the American Medical Association.

Dr. Glenn J. Smith extended an invitation to the Society to meet at the East Louisiana State Hospital during 1946.

The next meeting of the Society will be held at the East Louisiana State Hospital, Jackson, on the first Wednesday in March, 1946, at 7:00 p. m.

TOURO INFIRMARY

At the last staff meeting of the Touro Infirmary on December 12, 1945, Dr. Robert A. Katz read a paper on the use of ethyl ether and peanut oil and ethyl ether and saline as a new non-surgical means of treating impending ischemic gangrene with pain. A total of 44 cases, most of which were patients with diabetes and arteriosclerosis, were presented. Good results were achieved in 83% of the cases studied. The intramuscular and intravenous methods of administration were described; and the intravenous method was recommended as the method of choice.

Relief of pain and ischemia have persisted in the majority of cases over a period of from three to eight months since the last administration of the drug. Complications were only encountered with the intramuscular method and these were severe ulcers and large indurated areas. No complications were encountered with the intravenous method.

Further studies and observations on possible applications to other ischemic states such as cerebral, cardiac, arthritic, Raynaud's syndrome, trench foot, frost bite, varicose ulcers, thrombophlebitis, phlebothrombosis, and possible surgical applications may be suggested.

Dr. Rudolph Matas led the discussion and observed, "that although the mechanism of its action is not clear, the noteworthy facts are definite and without question — firstly that this is a new method of relieving the terrifying pain of the dying limb; secondly, it is equally successful in arresting the impending necrotic process, which would otherwise lead to the necrosis of the limb. Finally, the method has real merit in that its effects appear to last over several months."

Others to discuss the paper were: Dr. Isidore Cohn, Dr. Michael Michel, Dr. Randolph Lyons, Dr. Ruth Winston and Dr. Mims Gage.

A clinico-pathologic conference was held. The discussion was led by Dr. Eugene Vickery, and Dr. Harvey Colvin, pathologist, presented the pathologic discussion. Dr. Sydney Copland presented a paper on the complete removal of the clavicle.

CHARITY HOSPITAL

A meeting of the Medical Division of the Charity Hospital Visiting Staff was held on Tuesday, December 18 at 8 p. m., in the auditorium of the hospital. The program consisted of the following: Case Report by Dr. Allen J. Hill of the Department of Pediatrics, Tulane University School of Medicine; Diagnosis of Malaria by Dr. A. J. Walker of the Department of Tropical Medicine of Tulane University School of Medicine.

ANNUAL MEETING OF AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians will resume its annual meetings in 1946 and has now definitely chosen Philadelphia, May 13-17, inclusive. Headquarters will be at the Philadelphia Municipal Auditorium, 34th Street below Spruce.

The meeting will be conducted under the Presidency of Dr. Ernest E. Irons, Chicago, Illinois, and the General Chairmanship of Dr. George Morris Piersol, Philadelphia, Pennsylvania.

It will be deeply appreciated if editors of medical journals will announce this meeting and dates in order that other medical groups will plan their meetings at times not conflicting with that of the College, and in this manner perform a service for physicians and medical societies everywhere.

SOUTHEASTERN SURGICAL CONGRESS

The Southeastern Surgical Congress will hold its next Assembly at Memphis, March 11, 12, 13, 1946 at the Peabody Hotel.

The following is a partial list of those who will take part on the program:

Drs. Conrad G. Collins, New Orleans; Merrill N. Foote, Brooklyn; Clarence E. Gardner, Durham; James E. Hemphill, Charlotte; Robert Hingson, Jr., Staten Island; Arnold Jackson, Madison, Wis.; Roy R. Kracke, Birmingham; Karl A. Meyer, Chicago; J. O. Morgan, Gadsden, Ala.; Curtice Rosser, Dallas; Harold E. Simon, Birmingham; G. L. Simpson, Greenville, Ky., and Horace G. Smithy, Charleston, S. C.

The medical profession is invited to attend the Assembly. For further information write to Dr. B. T. Beasley, Secretary-Manager, Atlanta, 3 Ga.

DIRECTORY OF APPROVED SURGICAL TRAINING PLANS PUBLISHED BY AMERICAN COLLEGE OF SURGEONS

Chiefly as an aid to medical officers returning from war duty, the American College of Surgeons has published a 424 page directory in which are listed and described the approved programs of graduate training in surgery in 240 civilian hospitals in the United States and Canada, and in 32 Naval, seven Veterans Administration, and 10 United States Public Health Service hospitals.

The total number of approved training plans in the 289 hospitals is 228 in general surgery and 522 in the surgical specialties — fractures, plastic surgery, proctology, thoracic surgery, neurological surgery, orthopedic surgery, urology, obstetrics and gynecology (combined and separately), and ophthalmology and otolaryngology (combined and separately). In these 750 training plans in 289 hospitals, approximately 2,000 surgeons may be trained, whereas, as the College points out, training facilities for at least 5,000 are urgently needed for returning medical veterans whose training in surgery was interrupted by their military service. Publication of the directory is expected to stimulate the formation of additional programs of training in suitable hospitals, according to Dr. Irvin Abell, Chairman of the Board of Regents.

The approved programs of graduate training in surgery in civilian hospitals are located in the following states and provinces: Alabama, 3; California, 12; Colorado, 1; Connecticut, 2; District of Columbia, 5; Georgia, 3; Illinois, 16; Indiana, 4; Iowa, 1; Kansas, 1; Kentucky, 2; Louisiana, 3; Maryland, 16; Massachusetts, 13; Michigan, 16; Minnesota, 9; Missouri, 12; New Jersey, 5; New York, 40; North Carolina, 2; Ohio, 17; Oklahoma, 1; Oregon, 4; Pennsylvania, 23; South Carolina, 1; Tennessee, 4; Texas, 6; Virginia, 5; West Virginia, 1; Wisconsin, 4; Ontario, 4; Quebec, 4. Additional approved programs will be published from year to year in the Approval Number of the College Bulletin.

ARMY HONORS

The Bronze Star was awarded to Major Early B. Lokey, Jr., Hattiesburg, Mississippi, for his meritorious work on Leyte and Okinawa while serving as regimental surgeon with the 382nd Infantry. Lokey was a member of the class of 1941 at Tulane and interned at Charity Hospital, New Orleans.

The New Orleans friends of Commander John F. Oakley were delighted to hear that his bravery in action on Saipan and Tinian has been recognized by the U. S. Navy who awarded him the Navy and Marine Corps Medal for heroism in action. Dr. Oakley entered the service September 26, 1942, and previously he was a teacher at Tulane, a member of the staff of Charity Hospital. He is a member of the Orleans Parish Medical Society.

LE DOUX HONORED

At the Annual Meeting of the American Therapeutic Society, which took place in Cincinnati, in November, Dr. Lucien A. LeDoux was elected 2nd Vice-President of this Society.

Dr. Lucien A. LeDoux was also elected 1st Vice-President of the Southern Medical Association at its annual meeting held in Cincinnati.

SILVER ANNIVERSARY FOR MISS MARSHALL

At a celebration of the twenty-fifth anniversary of Miss Mary Louise Marshall's connection with the Orleans Parish Medical Society as assistant librarian for the organization, she was presented with a beautiful silver service. This is a well merited tribute because while the doctors of the Orleans Parish Medical Society appreciate how much Miss Marshall has done and is willing to do for them, it reflects also an appreciation of what she has done in supplying the doctors of the State Medical Society with needed books that they request from time to time. Miss Marshall is the librarian of the Rudolph Matas Library of the Tulane Medical School, is president of the National Library Association and is an honorary consultant to the Army Medical Library.

NEWS ITEMS

Dr. George Haik has been made Professor of Ophthalmology at the Louisiana State University Medical School, succeeding the late Dr. T. J. Dimitry.

Dr. John Adriani and Dr. Ray T. Parmley received the first award at the recent meeting of the Southern Medical Association for their scientific exhibit on Saddle Block Anesthesia.

The Temple University Medical School and Hospital will conduct a postgraduate course in psychosomatic medicine for the internist and general practitioner from March 4 to 30, 1946. The fee will be $200.00. Apply to Mrs. Carol Krusen Scholz, Registrar for Psychosomatic Course, Temple University Hospital, 3401 N. Broad St., Philadelphia 40, Pa.

PREPAYMENT MEDICAL CARE PLANS

Numbers Four and Nine of the Fourteen Point Program called for the development in or extension to all localities of voluntary sickness insurance plans and a continuous study of such plans. To activate these points the Council on Medical Service October 18, authorized the formation of a Prepayment Medical Care Advisory Committee.

Dr. E. J. McCormick has started the Committee off with the following appointments:

Mr. Jay Ketchum, Director, Michigan Medical Service, Detroit
Dr. Frank I. Feierabend, Secretary, Surgical Care, Inc., Kansas City, Missouri
Dr. Norman M. Scott, Medical Director, Medical-Surgical Plan of New Jersey
Dr. F. E. Elliott, Medical Director, United Medical Service, New York
Mr. Edwin Kingery, Director, Iowa Medical Service
Mr. Ralph W. Neill, Director, Washington State Medical Bureau
Mr. Thomas A. Hendricks, Secretary, Council on Medical Service and Public Relations.
Mr. George W. Cooley, Assistant to Mr. Hendricks.

Doctor McCormick has asked for early action by the Committee with the suggestion that it recommend in detail the best method or methods for approaching the problem of "How to bring some semblance of order to the present prepayment medical care situation." The Committee is authorized to: Study the present status of plans, suggest the best method of gathering continuous and factual data on plans, direct the analysis of such data, furnish assistance to medical societies interested in starting or altering plans, and coordinate the program generally.

THE LATEST ON PLANS

Alabama: The Alabama State Medical Association has turned to the Hospital Service Association (Blue Cross) of Alabama for medical-surgical coverage. The state laws were amended to enable the Hospital Service Corporation to provide medical and surgical contracts for its subscribers. The contracts provide an indemnity only and include in-patient medical care — ($2.00 per day for twenty-five days) — the usual surgical procedures, and a number of additional in-hospital services not usually found in other plan contracts.

Arizona: The governor of Arizona signed a bill on October 3, 1945 — duly passed by the State Legislature — entitled "The Arizona Nonprofit Hospital and Medical Service Corporation Law."

This enabling act provides that the corporation or corporations formed under the act may sell either hospital or medical service contracts *or both.* The act seems to provide for service contracts only, with no provisions for cash indemnity payments.

Florida: The State Legislature has passed an enabling act similar to that of Arizona.

Illinois: Enabling act passed on July 22, 1945. A committee under the chairmanship of Dr. C. H. Phifer is now studying proposals.

Kansas: Enabling act passed in March of this year. A statewide plan has been prepared and is at present in the hands of the Insurance Commissioner. The new organization will be called "The Kansas Physicians Service."

Maryland: A plan has been drawn up and passed by the Maryland Legislature. The details are now in the hands of Dr. Victor F. Cullen, State Sanatorium, Maryland.

Oklahoma: The Oklahoma Physicians Service, a mutual corporation, started operations on June 1, 1945. It was organized and financed by the Oklahoma State Medical Association with cooperation by the Oklahoma Blue Cross Plan. There are fifteen trustees, of whom nine are doctors.

The Plan offers a straight surgical and obstetrical contract with no medical provisions or riders. Premiums are $.75 for the employee, $1.50 a month for the employee and one dependent, and $2.00 for the family. The contract is rather limited in that any disease, injury, or deformity, either physical or mental, ..., which existed prior to or at the time of application is not covered. The total maximum benefits in any one contract year are: $300 for the individual, $600 for two persons, and $1,000 for the family. The Oklahoma Blue Cross is handling the details of selling and administration.

Virginia: The Virginia Medical Service Association, approved by the Virginia State Medical Society, is governed by a board of thirty-five persons of whom not less than two-thirds must be medical men. All administrative procedures are handled by the Blue Cross (Virginia Hospital Service Association). It is a combination indemnity-service plan with income limits for the latter set at $2,000, $2,500 and $3,000.

The contract offered is more inclusive than that of most plans. It is a single medical-surgical contract with no riders. The medical coverage is limited to in-hospital cases of three days or more duration and pays up to thirty-five days per year. Rest cures, observation cases, and check ups are not covered.

The surgical part of the contract is in-hospital only. A twelve month waiting period is required for: conditions being treated or for which correction was advised within one year prior to enrollment; hernias and elective surgery; tonsil and adenoid operations; and tuberculosis and mental conditions. A sum not to exceed $10 per year is paid toward diagnostic x-ray.

Washington: The Washington State Medical Bureau has been instructed to prepare a statewide contract suitable to cover such organizations as the grange, small farmer groups, and business concerns which operate over a wide territory. Consideration will be given to the necessity for a broader contract, for income limitations, and to the eligibility requirements for such groups.

The Bureau was reorganized in April of this year to coordinate the various local Medical Service Corporations operating in this State. Mr. Ralph W. Neill is the Bureau Manager and Dr. John F. Christensen, the President.

New York: The House of Delegates of the Medical Society of the State of New York adopted a resolution on October 9 urging the organization of a national casualty company to develop voluntary medical insurance coverage in areas where none exists and to enroll nationwide employers' groups.

Tentative plans call for a stock company owned and controlled by the medical profession. The company would assist medical society-sponsored plans through national enrollment of nationwide concerns. It would provide coverage in areas where it is not available and remain only until such time as the profession could set up its own plan. Hospital coverage would be offered through Blue Cross.

The Blue Cross Hospital Groups are already operating a plan along this same line. However, instead of a new corporation, a central enrollment office has been organized with headquarters in New York. This office will service all eighty-seven Blue Cross Plans and merely act as agent for them.

TRAINING OF PSYCHIATRISTS

The American Psychiatric Association and the National Committee for Mental Hygiene jointly announce the appointment of Captain Forrest M. Harrison (MC), U. S. N., as Director of a newly established Psychiatric Personnel Placement Service. The service is designed especially to help physicians and psychiatrists make contacts with training opportunities such as residencies, postgraduate courses and fellowships, and to aid institutions in locating suitable candidates for appointments. Physicians interested in psychiatry are invited to send in full biographical statements including personal data, education, training, experience and special desires, in order that this service may be of the greatest possible assistance to them.

Deans of medical schools, superintendents of hospitals, and directors of industrial organizations, clinics and others employing or participating in the training of psychiatric personnel, are invited to submit full information regarding available positions and courses, including financial details.

Foundations, universities and other agencies are asked to report pertinent fellowships in psychiatry, psychosomatic medicine and child guidance.

Inquiries should be addressed to Captain Forrest M. Harrison (MC), U. S. N., National Committee for Mental Hygiene, 1790 Broadway, New York City 19.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported for the week ending November 15 that there were 130 deaths in the city. These were divided 81 white, 49 colored, with 11 deaths in children under one year of age. The previous week there had been 152 deaths recorded but the three year average for the corresponding week showed 131 deaths. For the following week which came to a close November 23, the number of people dying in the city of New Orleans was approximately that of the corresponding week. There were three less deaths, two less in the colored and one in the white. This particular week over a three year period has averaged 149 deaths. In the week which terminated November 29 there was again a slight change in the total number of deaths among the citizenry of New Orleans. Of the 139 people dying, 82 were white, 57 were non-white and nine were infants under one year. There were 15 less deaths in the week which closed December 1 than there had been in the previous week. There were only 124 deaths recorded as contrasted with the three year average of 160 for this week. Of the deaths, 66 represented the white population, 58 the non-white and 13 were in children under one year of age.

INFECTIOUS DISEASES IN LOUISIANA

The weekly morbidity report emanating from the Louisiana State Board of Health contains the following abstracted information.

For the week ending November 3 the report contains the venereal disease data of the previous month. In October there were listed 1657 cases of gonorrhea, 1161 of syphilis, 35 of chancroid, 16 of granuloma inguinale and 13 of lymphopathia venereum. The other weekly reportable diseases showed that there were listed 142 cases of cancer, 81 of influenza, 89 of unclassified pneumonia and 25 of pneumococcic pneumonia, 49 of pulmonary tuberculosis, 29 of scarlet fever, 26 of septic sore throat, 22 of rheaumatic fever and 13 of diphtheria. There were also reported 117 cases of hookworm infestation, six of poliomyelitis, and for the first time in a long while no cases of typhoid fever nor any of meningitis.

The week which closed November 10, in contrast to the previous week, showed a small number of diseases reported and these not in large numbers. Thirty-eight cases of hookworm infestation led the list, followed by 37 of influenza, 20 of pulmonary tuberculosis, 16 of diphtheria, 15 of typhus fever and 12 of scarlet fever. There were no cases of pneumococcic pneumonia reported this week and only nine of unclassified pneumonia. Four cases of poliomyelitis were recorded and the same number of typhoid fever. Thirteen cases of typhus emanated from the Parish of Orleans.

The week of November 17 showed a sharp increase in the number of cases of influenza that were listed, 76 being reported to the State Board of Health. Other infectious diseases listed in numbers over 10 included 39 cases of pulmonary tuberculosis, 29 of scarlet fever, 19 of chickenpox, 15 of diphtheria, 11 of typhus fever and 10 of unclassified pneumonia. The typhus fever cases were scattered quite widely throughout the state. The one case of poliomyelitis which was reported occurred in Vermilion Parish. The following week, which closed November 24, showed a remarkable drop in the number of cases of influenza, only one being reported this week. Pulmonary tuberculosis showed a sharp increase with 59 cases listed, followed by 18 of diphtheria, 15 of hookworm infestation and 14 of scarlet fever. No other diseases were reported in numbers greater than 10. The six cases of typhus fever that were listed came from six separate parishes. Parenthetically it might be observed that so far this year there have been reported 364 cases of typhus fever as contrasted with 148 of typhoid fever. Typhus fever, heretofore a disease rarely recognized, in fact the first case in Louisiana was reported some 15 years ago, is now amongst the leaders of reportable diseases, except of course, the ubiquitous venereal diseases.

ALL BUT 11,000 DOCTORS TO BE RELEASED BY NEXT JUNE

Army doctors are being released faster than the Army is reducing its total strength, in spite of the large number of battle casualties still remaining in hospitals and the requirement of doctors for separation center work, according to Major General Norman T. Kirk, Surgeon General of the Army, who spoke recently in New York in appreciation of the services rendered by member hospitals of the United Hospital Fund of New York.

"The peculiar situation that we find ourselves in is that demobilization, in which everyone is concerned, cannot proceed without the help of thousands of doctors — 2,000 of whom are devoting their medical services solely to separation centers," General Kirk said. "By the first of January more than 14,000 doctors will have been returned to civilian life, which is more than one-third of the total number of doctors comprising the Army Medical Corps at its peak. By June of next year we anticipate releasing all but 11,000 doctors."

Gen Kirk, stating the peak hospital load in the United States to be 318,000, pointed out that there is still a need for medical personnel and that "one of our greatest problems is to hold enough doctors in the service to give the maximum medical care to our patients."

LULL GETS DISTINGUISHED SERVICE MEDAL

Major General George F. Lull, Deputy Surgeon General of the Army, has been awarded the Distinguished Service Medal for "exceptionally meritorious conduct in the performance of outstanding services in the Office of The Surgeon General from June 1940 to August 1945."

First commissioned into the Army Medical Reserve as a First Lieutenant in 1912, General Lull had reached the rank of temporary Lt. Colonel by 1918, though he later reverted to the rank of Major until the confirmation of his rank as Lt. Colonel in 1933. In 1939 he was promoted to Colonel, in 1943 to Brigadier General, and in 1943 to his present rank. He served in France with the AEF as Commanding Officer of Base Hospital No. 35, and, previous to World War I, in the Canal Zone at Camp Gaillard. He has served in various positions at Walter Reed General Hospital, including Chief of Laboratory Service, Director of Laboratories and Professor of Bacteriology, Director of the Occupational Therapy Department, and Instructor at the Army Medical School. In addition to these duties, he has served as Assistant to the Eighth Corps Area Surgeon, Medical Advisor of the Governor General of the Philippines, and as Director of Military Personnel and Chief of the Statistical Division in the Office of The Surgeon General.

MEDICAL DEPARTMENT PERSONNEL IN ETO GET TOTAL OF 22,304 AWARDS

Medical Department personnel in the European Theater of Operations have received a total of 22,304 awards between the period of December 7, 1941 and October 1, 1945, including 97 Distinguished Service Crosses and 2,849 Silver Stars, according to a recent announcement by the Office of The Surgeon General.

Enlisted men of the Medical Department received 17,974 of the awards, officers 3,758, and nurses 572.

The 32,000 officers of the medical service in this theater (not including nurses) received four Distinguished Service Crosses, 196 Legions of Merit, 4 Clusters to the Legion of Merit, 200 Silver Stars, 20 Clusters to the Silver Star, 304 Soldier's Medals, 2,716 Bronze Star Medals, 308 Clusters to the Bronze Star, 3 Air Medals, and 3 Clusters to the Air Medal.

The Congressional Medal of Honor was received by one of the 202,000 Medical Department enlisted men in the European Theater of Operations. They also received 93 Distinguished Service Crosses, 16 Legions of Merit, 2,646 Silver Stars, 110 Clusters to the Silver Star, 202 Soldier's Medals, 13,779 Bronze Star Medals, 808 Clusters to the Bronze Star Medal, 227 Air Medals, and 92 Clusters to the Air Medal.

LEWIS A. GOLDEN, M. D.

At the December meeting of the Orleans Parish Medical Society the following resolution was passed:

WHEREAS, God in His Infinite Wisdom has removed from our midst Dr. Lewis A. Golden in the very height of his usefulness and we record accordingly the passing of a most valued member,

THEREFORE, Be it Resolved, that his untimely death has caused a great loss to the community and to his friends, and the field of neuropsychiatry feels his passing keenly by reason of his earnest, sincere and sympathetic understanding of the saddest phase in medical practice, and

BE IT FURTHER RESOLVED, that this humble tribute to our confrere and fellow member be written into the minutes of the Orleans Parish Medical Society and that a copy be sent to the New Orleans Medical and Surgical Journal and a copy to Mrs. Lewis A. Golden.

SOLON ROBINSON HUMPHRIES, M. D.

Information has been received that Dr. Solon Robinson Humphries, for many years a member of the Orleans Parish and Louisiana State Medical Societies, died on September 26, 1945. Dr. Humphries was born in 1880 and was a member of the 1910 graduating class of Tulane University.

WOMAN'S AUXILIARY
LETTER FROM THE PRESIDENT

Dear Auxiliary Members:

With a heart full of sincere thanks to Almighty God for a world once more at peace, I extend greetings.

As this issue of the Journal comes to you, activities in your Auxiliary are, undoubtedly in their busiest and happiest period.

I am glad to report that all of the routine business of the State Auxiliary has been attended to promptly. Officers, chairmen of standing committees and councilors have been appointed. Stationery has been printed and mailed to each Board member and parish president. After receiving the approval of Dr. Fuchs, the State Society President, all parish auxiliaries were notified of the projects to be sponsored this year. Letters were written to each parish president and a list of the names of all of our parish presidents was enclosed. I have met with three of our largest auxiliaries at their regular monthly meetings; New Orleans, Caddo and Ouachita. They are vital, friendly groups, cooperating fully with all state sponsored projects and also having splendid success with many individual activities.

The Shreveport ladies still continue to devote much of their time to the Blood Bank which they sponsor for the benefit of the patients in their local hospitals. Their Toy Loan Library is noteworthy and plans were being discussed for a gala Christmas party.

Ouachita Auxiliary voted to purchase two books for their public Library in memory of a local doctor who had passed away.

Orleans Parish gives regular monthly financial assistance to the indigent widow of a doctor. Their meetings, followed by entertaining programs and a lovely tea, are well attended and happy occasions.

Are you planning a Christmas party? Many of our war service doctors will be at home with their families for this Christmas and a jolly party for all auxiliary members and their families, with a big tree, chubby Santa Claus, sack of toys for the kiddies and refreshments for all sounds like a cheerful celebration.

If any of you do have such parties, please write all about it to Mrs. Roy Carl Young, our Publicity Chairman, and through the Journal we can all hear of the wonderful time you've enjoyed.

Because of general wartime curtailments in transportation, food and other facilities, we did not have a State Meeting last Spring and only a very few of our members heard of the splendid work done by our auxiliaries during the year.

Having contributed so much to the success of these activities, I felt that you would like to hear about them.

Our members reported 16,779 hours given to Red Cross as nurses aides, instructors and students in home nursing, flood control, first aid, work in hospitals and making surgical dressings; 3000 hours to war participation as assistants in gas and sugar rationing, bond drives ($335,965.00 of Bonds sold) and serving as hostesses in service centers.

Donations were made to War Chests, Service Clubs and to the United War Fund. Books and other gifts were made to children in hospitals, Thanksgiving baskets distributed to needy families and Christmas packages sent to patients of the Carville Leprosarium. Monthly financial aid is given to two indigent widows of former doctors. Layettes were made and given to needy mothers. Donations made to youth centers. Five hundred toys were collected for a Toy Loan Library, and a Christmas Party was given for children in one hospital.

Keen interest was shown in the anti-tuberculosis campaign and one Auxiliary voted to buy a new flouroscopic machine for a local sanitarium caring for indigent patients.

Doctor's Day was celebrated with several fine editorials and cartoons in various state newspapers.

The Cancer Control Drive for funds for educational and detection Clinic purposes was ably assisted by our members. The Shreveport Auxiliary reporting a remarkable collection of $10,000.

Our total membership is 534 and our bank balance is $551.03.

In the critical year which lies ahead it is essential that the Auxiliary membership keep themselves well informed as to the attempts made to change the status of medicine and imperil public health.

The State Society President, Dr. Fuchs, has suggested that programs be arranged to present the doctors' viewpoint, and that these programs be open to the public. Large groups of women have endorsed State Medicine. We must attempt to give them authentic information and facts including taxes and "promised" medical care.

As a result of this war our country has become health-conscious, and there is every indication that the public will insist upon improved medical service. Our doctors are interested and anxious to help all people to get adequate medical care but they are opposed to regimentation; to a politicalized program of Government Compulsory Health Insurance. We can best help by being well informed on this subject which will enable us to give intelligent, concise answers to any questions we may be asked in regard to these matters.

Our challenge as Auxiliary members of the medical profession is to stand shoulder to shoulder to help safeguard that profession. Never before were our opportunities for service greater.

Our Auxiliaries have never failed to cooperate at all times in every state sponsored project — I congratulate you and warmly thank you for your help and kindness to me. I am yours to serve.

May I ask your continued cooperation and support during my year in office?

With all of my heart I wish for each of you a Merry, Merry Christmas, and may every day in the New Year be a happy one.

Mrs. Paul G. Lacroix,
State President.

For its Christmas meeting, the Woman's Auxiliary to the Orleans Parish Medical Society enjoyed a program of Christmas music sung by the girls of the McGehee Choir under the direction of Miss Gladys Sinclair. Mrs. H. Theodore Simon, President of the Society, presided at the meeting turning the group over to Mrs. Carroll Gelbke who is to succeed her as president for the coming year.

Hostesses for the afternoon were: Mesdames Lucien Delery, Frank Loria, Leopold Levy, A. J. McComiskey, R. B. Riera, G. F. Sustendal, Julius Wilson, Stanley Cohen, W. D. Norman, John Tanner. Mrs. W. H. Roeling and Mrs. Carroll Gelbke presided at the tea table, lovely with Christmas colored flowers and candles.

Members and their guests enjoyed the program and tea.

The President of the Woman's Auxiliary to the Orleans Parish Medical Society, Mrs. H. Theodore Simon, enjoyed a luncheon at the Orleans Club given in her honor by the members of the board. The table was bright with holly and a large bowl of Christmas flowers. Mrs. Carroll Gelbke, President for the coming year and Mrs. Paul G. Lacroix, State President of the Woman's Auxiliary to the Louisiana State Medical Society, were also honored at the luncheon.

A coffee was the monthly event the Woman's Auxiliary of the East Baton Rouge Medical society, and was held recently at the home of Mrs. Lionel Lorio. Mrs. Rhett McMahon poured during the hour, assisted by Mrs. E. Merse, Mrs. C. T. Morris, Mrs. T. H. Pargen, and Mrs. Clarence Lorio.

Mrs. Roy Rabalais presided over a brief business meeting. A paper on the constructive program for medical care advocated by the American Medical Association was read. In January the auxiliary will honor the state president, Mrs. Paul Lacroix, and other state officers with a coffee at the home of Mrs. Arthur D. Long.

Mrs. J. S. Anderson was welcomed as a new member and Mrs. C. P. Smith as a guest. Two members, Mrs. Webb McGehee, Jr., and Mrs. T. H. Pargen, whose husbands have returned from the service, were welcomed back into the group.

The camelias, which abound in the Lorio gardens and of which Mrs. Lorio is most fond, were used in a profusion of beautiful colors for the centerpiece and at other points about the house. Pyracantha berries were also used to achieve a gala effect.

Mrs. Roy Carl Young,
Chairman Press & Publicity.

BOOK REVIEWS

The Abortion Problem: Proceedings of the Conference held under the Auspices of the National Committee on Maternal Health, Inc. Baltimore, The Williams & Wilkins Co., 1944. pp. 182. Price $2.50.

This small volume of 180 pages represents the efforts of the National Committee on Maternal Health to find a solution to an ever-present medical and social problem. It is composed of the papers read to the committee by eminent physicians, statisticians, sociologists, and lawyers, as well as a round table discussion of the pertinent facts in each paper. The papers were presented in four groups: The Magnitude of the Abortion Problem; Spontaneous Abortion and Its Prevention; Social, Moral and Economic Causes, and Control of Abortion; and the Control of the Abortion Problem.

The frequency of abortion, has been estimated by F. J. Taussig to be 681,000 per year in the U.S.A. (1935). Statistics presented by sociologists suggested that the actual figures were somewhat lower, in the neighborhood of 400,000. The frequency of abortions in various economic, social, and religious groups, the effect of literacy, and the effect of contraceptive education upon abortion, have been presented in carefully prepared studies. When one considers that 30 per cent of maternal deaths are directly attributable to abortion, either spontaneous or induced, the serious nature of the problem becomes evident. The conflicts in various laws dealing with abortion prevent the state from effectively dealing with abortionists, either the medical or the non-medical. John Harlan Amen, District Attorney of New York, presented the difficulties of his office both in obtaining convictions, and in correcting conflicts in the law.

The consensus of the conference was that the abortion problem, in all of its aspects, when stripped to the barest essentials, was one of education of the population in general. Improved sex education, premarital instruction, and contraceptive advice seem to be the most promising means of control.

This volume is recommended in part to all who practice medicine in any of its branches. It is especially recommended to the earnest consideration of all who treat women during their reproductive years.

John C. Weed, M. D.

Clinical Urology: By Oswald Swinney Lowsley, A.B., M.D., F.A.C.S., and Thomas Joseph Kirwin, M.A., M.S., M.D., F.A.C.S. Baltimore, Williams & Wilkins Co., 1944. 2v. plates. Price $10.00. 2nd Edition.

The authors have covered the subject up to date of publication in a most satisfactory instructive manner including the revolutionization in drug therapy.

This comment would not begin to be complete without giving Wm. P. Didusch credit for the magnificent illustrations which require no text for their interpretation and surgical execution.

MONROE WOLF, M. D.

Penicillin Therapy Including Tyrothricin and Other Antibiotic Therapy: By John A. Kolmer, M.S., M.D., Dr.P.H., Sc.D., LLD., L.H.D., F.A.C.P. New York. D. Appleton-Century Company, Inc., 1945. pp. 302. Price $5.00.

This recent review of the development of our knowledge of penicillin includes not only therapeutic studies but also achievements realized in the laboratory. Particularly in the latter aspect of the subject the author is well qualified by training and experience to present a clear appraisal of the advances which have been made. After a general survey of antibiotic substances and their biologic significance, the methods of production and purification of penicillin are reviewed. This is followed by a discussion of the means of determining both the potency of preparations prepared in the laboratory and also the content in body fluids. The physical properties and what little is known of the chemistry of penicillin is presented. The absorption, distribution in body fluids and excretion of the drug receives full consideration along with methods of administration, dosages and consequent blood levels. The toxic manifestations, probably due to impurities, encountered in clinical use are briefly discussed and its low degree of toxicity both in animals and man is emphasized.

The organisms which are susceptible and not susceptible to the action of penicillin are listed and the experimental evidence upon which this is based, is briefly reviewed. Of particular interest in this regard is a comparison of the antimicrobial activities of penicillin and sulfonamides and also of their comparative merits as therapeutic agents. Furthermore, the fact that penicillin is by no means a cure-all is stressed by the list of diseases in which it is ineffective.

Penicillin therapy is discussed with direct reference to the experience of many investigators. Particular attention is given to staphylococcal, streptococcal, pneumococcal, meningococcal, gonococcal and clostridial diseases, to the treatment of burns and wounds, to syphilis and a variety of miscellaneous conditions.

Although the major emphasis is on penicillin the laboratory and clinical aspects of other antibiotic agents such as tyrothricin, gramacidin S, streptothricin, patulin, chlorophyll and streptomycin are briefly reviewed.

This is an authoritative work with an extensive bibliography. It is amply indexed and may well be used as a reference book on the subject. It is recommended to the medical profession as a readable review of the literature to date on penicillin.

RALPH G. SMITH, M. D.

A Bibliography of Visual Literature, 1939-1944: Compiled by John F. Fulton, Phebe M. Hoff and Henrietta T. Perkins. New Haven, Yale University, 1945. pp. 117. Price $3.00.

This volume will be a valuable addition to private and public medical libraries and will be extensively used by all interested in recent ophthalmic bibliography.

Being written essentially for the needs of war, few references to diseases of the eyes are presented. The average ophthalmologist is more deeply interested in the latter now that the problems of wartime are less important.

This small volume contains the titles, authors and publications of all visual literature which pertain directly or indirectly to the war. Thirty-three hundred articles and books are mentioned in the following order: (1) Anatomy and Ophthalmology; (2) Physiology and Psychology; (3) Visual Examination and Testing (including Methods and Instruments); (4) Correction of Ocular Defects in Military Personnel; (5) Training for Military Specialties (including Optimal Conditions and Procedure, Job Analyses); (6) Ocular Trauma (in Military Services); (7) Goggles and Ocular Protection; (8) Visibility. The last three sections contain a key to abbreviations of journals cited and indices of authors and subjects.

CHAS. A. BAHN, M. D.

PUBLICATIONS RECEIVED

Cutler Publishing Co., Chicago: Theory of Life, Disease and Death, by Morton Whitby, F. R. S. M., M. R. C. S.

Grune & Stratton, Inc., New York: Hypnoanalysis, by Lewis R. Wolber, M. D. Personality Factors in Counseling, by Charles A. Curran, Ph. D.

Johns Hopkins Press, Baltimore: The Falling Sickness, by Owsei Temkin, M. D.

Lea & Febiger, Philadelphia: The Extremities, by Daniel P. Quiring, Ph. D., Beatrice A. Boye, Erna L. Boroush, M. A., and Bernadine Lufkin, A. B.

J. B. Lippincott Co., Philadelphia: Clinics, by George M. Piersol, M. D. Manual of Diagnosis and Management of Peripheral Nerve Injuries, by Robert A. Groff, M. D. and Sara Jane Houtz, B. S.

W. B. Saunders Co., Philadelphia: Textbook of Pediatrics, by Waldo E. Nelson, M. D. Diseases of the Nose, Throat, and Ear, by Chevalier Jackson, M. D., Sc. D., LL. D., F. A. C. S. and Chevalier L. Jackson, M. D., M. Sc., F. A. C. S.

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CARCINOMA OF THE CERVIX

AN ATTEMPTED FOLLOW-UP STUDY OF 500 CASES. II. THE RESPONSIBILITY OF THE MEDICAL PROFESSION FOR THE END-RESULTS*

PETER GRAFFAGNINO, M. D.†
and
ELIZABETH M. McFETRIDGE, M. A.
New Orleans

A previous communication in this series[1] presented in some detail the statistical data in 500 cases of carcinoma of the cervix treated at Charity Hospital of Louisiana at New Orleans over the approximately five and one-half year period ending July 1, 1937. The most important data may be briefly summarized as follows: One hundred eighty-three of the 500 women were white and 317 were negro. The age range was from 20 to 78 years. Approximately two-thirds of the patients were between 35 and 55 years of age at the onset of symptoms, but 18 per cent were under 35 years of age. Forty-three patients had no treatment at all. Ideal treatment, according to modern criteria, was carried out in only 28 patients, and even by considerably lower arbitrary criteria only 194 patients had treatment that could be considered in any way adequate. Eleven patients were treated surgically, only one of whom was submitted to the Wertheim operation.

Of 397 patients on whom a follow-up could be secured (after most intensive efforts) 358 are known to have died, two of whom survived for five and seven years, respectively, without recurrence and eventually died of non-cancer-connected causes, and 39 are known to be alive for periods varying from seven to 12 years after treatment. Included in the series are 29 instances of carcinoma of the cervical stump; four of this group, all negroes, are included among the survivors.

THERAPEUTIC CONSIDERATIONS

It was pointed out in the preceding paper of this series[1] that in the evaluation of these sorry results the fact must be borne in mind that during the period covered by this study the amount of radium owned by the hospital and the facilities for high-voltage therapy were totally inadequate for the patient load, so inadequate, in fact, that patients with far advanced disease, during part of the period investigated, could not be treated even palliatively. It should be added that since April, 1938, the situation in respect to both radium and facilities for deep-voltage therapy has been greatly improved, and while the patient load is still very heavy, adequate modern treatment is now the rule in any case in which it is indicated.

Certain criticisms and comments concerning the use of the facilities which were available during the period covered by this study seem justified. In the first place, the lack of facilities for deep-voltage therapy

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*These studies were financed by a grant from the Helis Research Institute, Hotel Dieu, New Orleans.

†From the Department of Gynecology of the School of Medicine of Louisiana State University and Charity Hospital of Louisiana at New Orleans.

was particularly unfortunate at the New Orleans Charity Hospital because of the high incidence of pelvic infection at that institution. When carcinoma of the cervix is associated with pelvic infection, radium is either absolutely contraindicated or is contraindicated until the infection is cleared up; and the whole reliance must be upon deep-voltage therapy.

Associated pelvic infection is so frequently present in negro women with carcinoma of the cervix that it must always be excluded, regardless of the apparent innocence of the history, before radium is applied. The same precaution is wise in white women, though pelvic infection is less frequent in that race. In a number of instances in this series the risk seems to have been overlooked. Four patients, as already noted, died of peritonitis following the application of radium, and a review of the histories suggests that in at least three of these cases the presence of pelvic infection should have been suspected from the previous history.

In 23 other cases the radium had to be removed before the planned exposure was completed, because of temperature elevations to 102° F. and higher, in some instances within three or four hours after it was applied. Goldscheider[2] has pointed out that such elevations are of great prognostic significance. In her own series, regardless of whether the radium was removed because of the temperature elevation or the exposure was continued as planned, the five-year salvage was considerably less than in the cases in which such elevations had not occurred. The figures in the Charity Hospital series are too small to permit dogmatic statements, but it is perhaps of negative significance that a temperature elevation necessitating the removal of radium occurred in only one of the survivors treated by this method.

Again, it must be admitted that the facilities which did exist at Charity Hospital during the period of this study were not always used to the best advantage. At that time the decision as to the amount of radium to be applied in each case and as to whether or not it should be preceded or followed by deep-voltage therapy was the responsibility not of a single department of radiotherapy, as at present, but of the individual gynecologists on the hospital staff. Their practice was widely different, and in a number of instances it does not seem to have been in accord with current standards of therapy. Criticism along this line, however, must be guarded, for however well thought out the plan of therapy might be, it frequently could not be followed to its conclusion because of the limited therapeutic facilities.

Finally, in addition to the fact that so large a proportion of patients did not receive adequate irradiation, many of them, for reasons to be discussed later, did not receive it over concentrated periods of time. It seems doubtful, too, in view of the extent of the lesions in many cases, that the delivery of the irradiation was always as planned. Lynch[3] has called attention to the difficulty of keeping radium in place in lesions which are irregular and are characterized by deep sloughs, as many in this series were, and has suggested that it is often edifying to check by roentgenologic methods how far the element has migrated from the location in which the gynecologist thought he had placed it.

Prophylactic irradiation was used in a number of instances in this series, though in view of the small original dosages in many instances it is perhaps charitable to dignify it by that term. Garcia and Schlosser[4] who have given up irradiation for prophylactic purposes, have pointed out if the initial treatment is adequate, additional irradiation may be injurious because the tolerance of the body structures is exhausted. Their practice, however, is predicated upon adequate initial irradiation, which most of these patients, by modern standards, did not receive.

Undoubtedly some of the rectovaginal and vesicovaginal fistulas in this series can be traced to imprudent repetition of irradiation in poorly selected cases, and there seems no doubt that a fracture of the femur in one of the survivors was due to unwise and unnecessary continuation of treatment. Scheffey,[5] however, believes that salvage is definitely increased by prophylactic irradiation, which he used in almost half of the survivors in his own series. Its value in the Charity Hospital series, in which, it must be emphasized again, initial irradiation was frequently inadequate by any standards, can be judged not so much by the cases in which it was employed as by the numerous cases in which late recurrences might perhaps have been prevented had it been employed.

The small group of surgical cases in this series also needs comment. As already noted, radical hysterectomy was done in one case, with anything but happy results. Of the remaining 10 patients, two were treated by vaginal hysterectomy, seven by complete hysterectomy, and one by supravaginal hysterectomy, with conization of the cervix. The latter case is one of the four in which carcinoma was not suspected before operation; an extensive intracervical malignancy was discovered when the uterus was amputated at the vaginal level. Jones and Jones,[6] in a report of 36 operations performed at Johns Hopkins Hospital over a 10 year period for cancer of the cervix, mention the same entirely unexpected finding in several of their carefully selected cases.

In one case in which complete hysterectomy was done the previous biopsy must have removed the entire area of malignancy, for careful serial sections of the excised uterus revealed no further evidence of the disease. Why this patient was submitted to hysterectomy, in view of the biopsy report, and why five other patients were submitted to operation under the same circumstances is not clear, and the fact that four of the group, three of whom had no other treatment, are included among the survivors does not alter the criticism. Their survival must be attributed to a happy combination of circumstances, for this is definitely not the way to treat cervical malignancy. It represents, indeed, very bad judgment, in spite of the good results.

A more extended discussion of therapy would be of little value in this connection. The facilities available were inadequate, and were perhaps not always wisely used, but, granting adequacy, as Meigs[7] has pointed out, the methods employed in any institution depend upon the amount of radium owned and the strengths in which it is prepared; that these variations are not of great consequence, however, is proved by the generally equal proportion of cures obtained by all adequate methods. Furthermore, regardless of the facilities available during the period covered by this study, and regardless of how they were used, most of the patients in this series, paradoxical as it may seem, died for other and far more basic reasons than that they did not have the proper therapy.

DIAGNOSTIC CONSIDERATIONS

The chief reason why most of these patients died is because of the stage of their disease at the time at which they first applied to the hospital for treatment. The curability of carcinoma of the cervix depends upon its *histologic* duration, not upon the duration of *symptoms,* though it is the *onset* of symptoms which eventually brings the patient to the physician. The patient's responsibility in this respect for her own survival will be discussed later. The present discussion concerns the responsibility of the profession when once the patient has presented herself for treatment.

It was not possible to determine how many patients in this series consulted physicians sooner or later after the appearance of symptoms and were promptly referred to the hospital, with a positive or tentative diagnosis of carcinoma of the cervix. The number of cases in which this was stated to be the course of events was not small, and undoubtedly this was also the course of events in many cases in which the histories carried no statements to that effect. What happened to 27 other patients under these circumstances, however, is worth listing in detail:

Two patients were told that they were having abortions though one of them insisted that pregnancy was out of the question in her case.

One patient was delivered at term two months before she entered the hospital with malignant disease from which she died within the year, but her physician gave her no advice, indeed told her nothing at all, concerning her cervix, though her disease must then have been fully apparent.

One patient was told that she had a diseased cervix, but was given no advice as to what to do about it.

One patient was submitted to dilatation and curettage, but was given no report on the findings and no suggestions as to treatment.

Two patients were cauterized, one of them monthly for two years; a biopsy was taken in this case at the beginning of the series of cauterizations but was reported negative and was not repeated, though symptoms persisted.

One patient was treated for lumbago for a year; her back pain proved to be due to the extension of a cervical malignancy.

One patient was treated by colporrhaphy and the application of silver nitrate to the cervix.

One patient was treated for indigestion. She did have digestive symptoms, but her pelvic symptoms, although she was duly questioned concerning her menstrual history when she was first seen, were completely ignored.

Seven patients were in the menopausal years or later. Two were told that their symptoms were due to the menopause and had no treatment at all. Two others, aged, respectively 55 and 65 years, were advised to take douches. One patient, aged 55, was told to rest. One patient, long past the menopause, consulted a physician following an episode of bleeding, and was told that since bleeding had ceased, no examination or treatment was necessary. One patient, also past the menopause, was told to wait and see what was going to happen; fortunately, she consulted a second physician, who referred her to the hospital at once.

The remaining 10 patients were treated by various medications, which in some instances seemed to be ergot and in others hormonal preparations. The unfortunate part of at least some of these cases was that the bleeding did cease temporarily, and additional irretrievable time was thus lost.

These 27 diagnostic errors carry their own lesson. Unfortunately, they are not isolated instances. In H. E. Miller's[8] study of gynecologic deaths from the New Orleans Charity Hospital, he mentions repeated instances of the same sort of mal-treatment. The only patient in his series of carcinoma of the cervix, in fact, for whom biopsy was advised by a physician outside the hospital immediately sought out a second physician, who treated her medically for the next two years.

Though these were the errors of physicians outside the hospital, the hospital staff itself cannot pass by on the other side. Some of its own errors were beyond excuse, or indeed beyond belief, as the following tabulation makes clear:

In five cases, for reasons that are not clear, no diagnosis at all was made for periods varying from four to 13 months.

Four patients were twice discharged without diagnosis or therapy, and one of them was not seen again for two years.

One patient, with a grossly diseased cervix, was discharged without histologic investigation with the statement, "Nothing in this patient's condition warrants treatment." She did not return for a year.

Two patients, without histologic investigation, were told to take douches.

No case in the series, however, quite equals the one described by H. E. Miller[8] in which no pelvic examination was made "for the paradoxical and incredible reason" that the patient was bleeding.

Another group of 15 patients can be described only as illustrations of missed opportunities. They were under treatment in various clinics or on the hospital wards. for periods up to six years, for syphilis, cardiac disease and other non-gynecologic conditions, which they actually had and upon which all the attention was concentrated. Over these periods their pelvic malignancy developed, and gave rise to symptoms, and in 13 instances remained undetected and untreated, either because they did not volunteer any information about their symptoms (inquiry as to the pelvic state not being the rule on non-gynecologic services after the initial visit, if indeed it is inquired into them) or because their statements concerning their symptoms were disregarded or were not properly evaluated. One of these patients, who had a large incisional hernia, lost 100 pounds under the direction of the medical staff in careful preparation for hernioplasty, while she meantime developed an incurable cervical malignancy which, of course, precluded the surgery for which she had been so carefully prepared.

Two of the 15 patients reported their symptoms promptly and due regard was paid to them. Both were promptly referred to the gynecologic clinic. But one of them, for some reason, became enmeshed in the red tape of consultation, and six months elapsed before she finally received a gynecologic examination. The other patient happened to be referred from the syphilis clinic. Syphilis of the cervix is exceedingly uncommon, but uncommon as it is, the gynecologist who saw her in consultation elected to test antisyphilitic therapy on that presumptive diagnosis for a period of three months before he performed biopsy.

The basic fault in this group of cases is obviously the concentration of specialists on their own fields, to the exclusion of other fields. To what lengths such concentration can be carried is even more apparent in certain patients with proved carcinoma of the cervix who were admitted to other services for non-gynecologic disease after treatment on the gynecologic service. This period, as already noted, was before the unit system of admission was instituted and some of them entered under different names, so that, for this reason or merely because no questions were asked, no information was secured concerning their previous admissions. As a result, the pelvic state was completely overlooked while non-pelvic conditions were treated. The most flagrant instance was the case of a patient submitted to laminectomy for intractable lower lumbar pain, after an extensive investigation which did *not* include the pelvis. The pain, of course, was due to extension of the cervical malignancy which had previously been treated with both radium and deep-voltage therapy.

Atypical Carcinoma of the Cervix: Although diagnosis was made without delay in the majority of these cases, there was occasionally a notable lack of suspicion in the hospital as well as without. One reason was the youth of many of the patients. There is nothing new in the statement that carcinoma of the cervix can and does occur in young women, but the fact is not always remembered and the disease is frequently not suspected in this age group, particularly in patients under 30 years of age, which was the age group of 20 of the negro and seven of the white women in this series. In a number of these cases biopsy was delayed, sometimes for several months. In one instance a negative biopsy was accepted as correct, in the face of clinical evidence to the contrary, and the resulting loss of time was disastrous.

In connection with diagnosis, it might also be mentioned that although discharge and spotting are usually the first symptoms of carcinoma of the cervix, this is not always true. In 51 cases in this series, if the histories are to be believed, pain was the first symptom. In a number of instances loss of weight over a period of time first raised the suspicion that something was wrong. Two patients gave chills and fever as the first symptoms. Eleven cases were ushered in clinically by serious hemorrhages. Rectal and urinary symptoms were primary in a number of cases, and in two instances the first manifestations of disease were symptoms of intestinal obstruction. In one of the latter cases the cervical malignancy was first discovered at the laparotomy undertaken for the relief of obstruction. Five patients dated the onset of symptoms to a blow or a fall, which, obviously, merely called their attention to existing symptoms. These atypical initial symptoms are important, for in some instances they were responsible for the lack of suspicion of malignant disease, and for resulting delay in diagnosis.

Histologic Diagnosis: The diagnosis, as already noted, could have been made clinically in 90 per cent and more of these 500 cases, but every case was proved histologically. The newer diagnostic methods, including the Schiller test, the colposcope and vaginal smears, were used only infrequently, chiefly because the latter two methods had not yet been devised, while the Schiller test was not in general use during the period of the investigation. Since all are merely adjunct methods, their omission probably had no influence on the end-results in this series. Carcinoma is a microscopic fact, which must be diagnosed by the microscope, particularly in early, curable cases, though colposcopic examination and the Schiller test are useful in the selection of the best area for biopsy, and the vaginal smear is useful in determining which cases submitted to pelvic examination should be submitted for biopsy. Macfarlane and her group,[9] however, have discontinued the use of the Schiller test, partly because they found that suitable areas for biopsy could be selected quite as readily without it and partly because their praiseworthy aim has been to keep their methods of examination so simple that they "could be duplicated by any physician at any crossroads in the country."

Attention has already been called to the 15 cases in the series in which from two to four biopsies were necessary for diagnosis. It may be significant, as indicative of the early stage of the disease, that in two of the surviving patients two biopsies were necessary for diagnosis, and in a third survivor three were required. In the majority of cases, however, repetition of the biopsy was necessary because the original biopsy had been improperly taken. Sometimes the correct area was not selected for excision of the specimen. More often the specimen was secured by cauterization and was unfit for histologic examination. The chief reason for the use of the cautery under such circumstances is the fear of hemorrhage, which often does occur after biopsy in carcinoma of the cervix. That difficulty can be circumvented, however, by removing the specimen by surgical methods, and then, if bleeding is troublesome, sealing the area by thermal or chemical cauterization. It goes without saying that if the clinical evidence does not agree with the histologic report, the clinical evidence should be accepted as probably correct, and the investigation should be continued until a definite diagnosis can be arrived at. That principle was not always observed in this series.

THE PROFESSIONAL OUTLOOK ON CARCINOMA OF THE CERVIX

The opinion of many lay persons that cancer is uncurable seems to be shared, if one may judge by this study, by many members of the profession. More than one patient stated that the physician who had referred her to the hospital had told her that she had cancer and nothing much could be done for her. The intern staff, at least in part, seemed to regard many of the women in the series either as medical derelicts, who were occupying beds which could be used to better advantage for other patients, or as patients whose disease required no haste in either diagnosis or treatment. Certainly in most instances there seemed little concerted effort, once the patient had been caught for diagnostic and therapeutic purposes, so to speak, to keep her in hand until these objectives were carried out. A startling number of patients were permitted to leave the hospital because of "illness in the family" or "business at home" or to go to a funeral or a wedding, or to "spend the Christmas holidays with the family" or for other equally trivial reasons. Sometimes patients permitted to leave under these circumstances did not return for long periods of time, and sometimes they did not return at all.

The proper utilization of hospital beds of course enters into the picture. Under the most favorable circumstances there is an inevitable delay between the initiation of diagnostic measures and the institution of treatment. The history must be taken, the physical examination made, routine laboratory measures carried out, the biopsy secured, the tissue examined and reported, medical, urologic and other consultations secured as necessary, the plan of treatment decided upon, and the radiotherapeutic facilities bespoken. In some instances in this series, while the report of the biopsy was being waited in doubtful and therefore hopeful cases, the patients were discharged temporarily, to free their beds for others in the interim, and in a lamentable number of cases they did not return promptly, as directed. In one instance, in which the whole machinery of diagnosis was carried out without delay, the patient was in the hospital only 24 hours; she was discharged, to return in a week for treatment after the biopsy had been reported, but she was not seen again for two years. She is not included among the survivors.

The Validity of Cancer Statistics: As has already been pointed out, the causes of death listed on numerous certificates secured from the city and state files was decidedly open to question, many of the patients having been observed too recently to make any diagnosis but carcinoma of the cervix completely unreasonable. For these inaccuracies there are several possible explanations. Some of the patients, particularly the negro patients, died without medical attention and the death certificates were signed by physicians who had no knowledge of their past history and apparently did not investigate it. Some patients were seen by private physicians for the first time when their state was terminal, and again there was no inquiry into past events.

These charitable explanations, however, do not cover a fair number of cases in which the stated cause of death was at complete variance with the known facts. It was difficult to understand a number of cases in which the physician who had referred the patient to the hospital later denied all knowledge of her, though he had signed the death certificate, on which he had not always included carcinoma of the cervix in the diagnosis. The most extraordinary of these cases concerned a patient under the care of a very competent internist at a private institution for several weeks before her death. Although she had left Charity Hospital with both ureters blocked by an extension of the cervical malignancy, carcinoma was not mentioned on the death certificate, which listed the cause of death as nephritis and uremia. It seems incredible that the desire of some families to keep malignant disease a secret, because they regard it as a sort of disgrace, should influence a physician of the training and competence of this practitioner, yet it is equally incredible that a physician of his ability could possibly have overlooked the malignancy which underlay the uremia.

Be these facts as they may, this study proves one point very clearly, that if the statistics of carcinoma of the cervix in the country as a whole are based on such statistics as these, they are likely to be highly misleading.

Other writers have made the same point. MacDonald,[10] in a study of data from the Massachusetts records, concluded that statistical conclusions as to age, sex, nativity and the disease as a whole were warranted, but that there was a considerable error in the exact location of the cancer and a large error in the duration of the malignancy on the basis of the vital statistics. Gideon Wells,[11] in an excellent paper on the nature and etiology of cancer, stated bluntly that untold numbers of cases of the disease are buried in death certificates labeled chronic myocarditis, a diagnosis, he caustically remarked, which, in addition to being "a refuge of ignorance" is "not likely to cause dissatisfaction or give rise to questions." This follow-up study from the New Orleans Charity Hospital bears him out, and suggests the addition of pneumonia as an equally safe and credible cause of death.

In this same connection, it is easy to understand, in the light of these facts, why the Bureau of Census,[12] in comparative statistics covering the period 1940-1943, lists carcinoma of the cervix as responsible for considerably less than half of all deaths from "uterine" cancer, though hospital statistics show that it forms more than 85 per cent of all cases of this type of cancer.

CARCINOMA OF THE CERVICAL STUMP

A word should be said about the 29 patients in this series with carcinoma of the cervical stump. No matter how one feels about the total operation, it is obvious that if it had been performed in these 29 cases, cervical malignancy could not have developed.

The crux of the argument which has been raging on the subject for years is whether the mortality rate in the hypothetical cases of malignancy which would develop in the retained cervix is higher than the absolute mortality of total hysterectomy if it were performed routinely. If the operation were always performed by experienced gynecologic surgeons, the surgical mortality would certainly be lower than the mortality of possible later malignancy, for in the hands of an experienced surgeon the total operation carries no higher a death rate than the subtotal operation. Unfortunately, however, the operation is not done only by experienced surgeons, and the routine performance of total hysterectomy would undoubtedly result in more deaths than would follow the development of malignancy in the retained stump. On the other hand, while it may be idealistic, it seems utterly reasonable to insist that if the cervix is lacerated or diseased, it should be removed, and that if the surgeon in charge cannot safely perform the complete operation, he should in all conscience turn the patient over to someone who can treat her properly.

Cauterization of the diseased cervix is not the solution. It was done in two of the cases in this series at the New Orleans Charity Hospital, both of which terminated fatally, and again the comment seems fair that if the cervix is sufficiently diseased to need cauterization, it had better be removed.

The mortality of carcinoma of the cervical stump is stated to be both lower and higher than the mortality of carcinoma of the cervix with the uterus *in situ*. In this series the proportion of survival was fairly high (four of 29 cases) but the series is too small to permit deductions. The therapy is essentially the same as when the uterus is *in situ*, though the dosage of radium must usually be reduced because the changed anatomic relationships make the bladder more vulnerable.

SUMMARY

This is the second of a series of three papers on an attempted follow-up study of 500 patients with carcinoma of the cervix treated at the New Orleans Charity Hospital over an approximately five and one-half year period ending July 1, 1937.

Therapy was unsatisfactory in many cases in this series because of the lack of adequate facilities for the patient load during the period covered by the investigation. Such facilities as existed, however, were not always employed wisely. The rationale of surgery in 10 of the 11 cases in which operation was done is not clear.

Diagnostic errors, both within and without the hospital, are discussed in detail, and the risk of the concentration of specialists on their own special fields is emphasized. The atypical character of certain cases is also discussed.

The question is raised as to whether the attitude of the medical profession toward carcinoma of the cervix is correct. In many instances in this series it suggested deep pessimism, while in others it suggested a lack of realization of the urgency of the disease.

The validity of cancer statistics, in the light of certain facts revealed by this series, is questioned.

The 29 cases of carcinoma of the cervical stump in this series raise the still unsettled question of the wisdom of performing total hysterectomy routinely.

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LIPOCAIC IN THE TREATMENT OF NON-TROPICAL SPRUE

REPORT OF A CASE*

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That the treatment of non-tropical sprue is non-specific and frequently unsatisfactory is a generally accepted fact. Bockus[1] considers it unlikely that patients suffering from idiopathic steatorrhea are ever actually cured. Hanes[3] recounts a significant number of cases relatively unaffected by the modern therapeutic regimen of liver extract, multiple vitamin administration, dietary measures, transfusions, calcium, and supportive treatment. Hughes[2] in an interesting pair of articles, presents the natural evolution of treatment of sprue and the steatorrheas.

It is generally agreed that the primary cause of the sprue syndrome lies in the malabsorption of fat. Hanes[8] has demonstrated malabsorption of fats. Barker and Rhoads[9] have observed a flat fat tolerance curve. Thaysen[10] observed a diminished absorption of fats and also demonstrated low fasting blood lipid levels. There is no impairment in the secretion and circulation of bile.[4] Ingested fat is largely digested.[5] That there is no fault in the delivery to the intestine of potent pancreatic enzymes was proved conclusively by Child and Dick in 1940.[6] Likewise, careful study of autopsy material has failed to reveal significant pancreatic pathology. Indeed, necropsy rarely shows significant deviations other than ascribable to the cachexia present. Recently, however, Hunt[7] has described autopsy findings of damage to the submucosal nerve plexus.

Several interesting theories have arisen concerning the primary defect leading to faulty utilization of fats. The work of Verzar and McDougall[11] in 1936 postulates a primary defect in intestinal absorption on the basis of adrenal cortical deficiency, resulting in faulty phosphorylation of fats and glucose. In 1940, Bennett and Hardwich,[12] concluded that the syndrome could be explained on the basis of a chronic jejuno-ileal insufficiency with consequent defects of secretion and absorption. This view has been recently amplified in Manson-Bahr.[13] Castle and Rhoads,[4] in 1932, studied sprue as manifested in Puerto Rico, and concluded that it is a deficiency disease closely related to pernicious anemia. This view has been challenged by Hughes.[2] Sprue is held by many persons to be a manifestation of avitaminosis B.[15] Ashford's work has largely been discarded.

It has long been recognized that raw pancreas, desiccated pancreas, and pancreatic products have a beneficial effect in the treatment of sprue,[1, 16, 17] Childs and Dick[6] have also observed excellent results from the administration of pancreatic juices. In 1936, Dragstedt, Prohaska, and Harms submitted evidence that the pancreas elaborates a formerly unknown hormone which has to do with the metabolism of fat. They coined the name lipocaic for this substance. It has become evident that lipocaic possibly is in some way concerned in the transport and utilization of fat.[18] Clinically, lipocaic has been of marked value in relieving the fatty liver of diabetes. [19, 20] It has been observed to lower the hyperlipemia of patients with xanthomatosis and psoriasis.[21] Bartels[22] has presented evidence suggesting that lipocaic is of value in the treatment of intractable diarrhea in hyperthyroidism. It is interesting to note that in this condition, fecal analysis shows an excess of fat; grossly the stools are bulky, loose, and light colored.

The lipocaic deficient dog presents a syndrome of low blood lipids, diminished glucose excretion, a large, fatty liver, with impaired hepatic function, and marked sensitivity to insulin. The patient with sprue shares certain of these features. There are low blood lipids, a low fasting blood glucose, with a flattened glucose tolerance curve; a demonstration of insulin sensitivity is not uncommon.

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Because of these common points and because lipocaic seems to be beneficial in fat metabolism, a trial of this hormone in the treatment of a case of sprue was considered justified. Through Dr. Lester Dragstedt. lipocaic was secured for this study from Armour laboratories.

CASE REPORT

E. L., a 56 year old white laborer was admitted to Touro Infirmary on June 9, 1945, complaining of an intermittent diarrhea of thirty-one years' duration.

His first attack of diarrhea developed at the age of 25, while grinding cane in a sugar camp where food was extremely poor. The stools numbered eight to ten daily, were pale frothy, foamy and extremely foul smelling. A good deal of flatulent dyspepsia accompanied the episode, which lasted until the patient returned to his home and improved nutrition. These episodes were recurrent and apparently related to an inadequate diet in that wholesome food brought about complete remissions. In 1941, associated with extreme dietary limitation, he suffered a recurrence of the diarrhea. This episode lasted for six weeks, the longest on record, and was accompanied by a loss of 30 pounds in weight, weakness, and for the first time, a moderately severe glossitis. He was hospitalized where he gradually improved on a regimen of transfusions, proper diet, liver extract, multiple vitamins, and supportive measures. He learned that bananas, milk and cheese acted almost as specifics in relieving the diarrhea. After discharge from the hospital, the patient remained asymptomatic for a year, during which time he received crude liver extract at weekly intervals. In 1943, the patient began the first of a series of recurrences of the diarrhea, which lasted from one to three weeks, and which were relieved by an adequate dietary intake, milk, cheese, and bananas. The patient gradually lost 20 pounds in weight with associated asthenia and a progressively severe normocytic anemia which did not respond to liver extract. The patient complained of vertigo, tinnitis, glossitis, gingivitis, slight exertional dyspnea, mild palpitation, flatulent dyspepsia, foul flatus, moderate pedal edema. There were recurrent areas of brownish-red pigmentation which appeared on the dorsum of the hands and wrists. There were occasional moderately severe leg cramps. The stools numbered up to 17 daily, were watery to mushy, pale, foul, frothy, floating upon the water in the commode.

Physical examination revealed a prematurely aged, emaciated, afebrile, chronically ill white male with bilateral dependent edema. The skin was sallow yellowish in color. Sensorium was normal. There was a moderately severe glossitis. The heart and lungs, aside from minimal emphysema, were within normal limits. The abdomen, protuberant in its lower half, had a peculiar doughlike consistency. There was moderate firm hepatomegaly. The dorsum of both hands showed irregular areas of brownish-red pigmentation.

The initial blood picture showed an anemia of 2,000,000 red cells with 43.5 per cent hemoglobin. There was a leukopenia of 2,200 white cells. The blood calcium was 8.8 mg. per cent, the phosphorus 2.8 mg. per cent, and the cholesterol 200 mg. per cent. The blood lipids showed a total of 0.415 ml. (a low normal value) while the neutral fat, fatty acids, and cholesterol esters totalled 0.32 ml. Stool cultures were negative. Microscopically, the stool showed many fatty acid crystals. A study of the stool fats revealed total fats being 22.4 per cent of moist stool. The fatty acids made up 6.9 per cent of moist stool, and the neutral fats 15.5 per cent. An insulin tolerance test was normal. The glucose tolerance curve was flat, the fasting glucose was 77 mg. per cent. The erythrosedimentation rate (Westergren) was 27 mm/hr. Cephalin flocculation test was negative in 24 hours. Gastric analysis revealed 2 degrees free, and 5 degrees total acid. Gastrointestinal series was normal.

On a diet high in vitamins, protein and carbohydrate, yet easily assimilable, and low in fat supplemented by crude liver extract, 2 c. c. intramuscularly daily, panteric tablets one after each meal, and a multiple vitamin preparation, he improved. Peripheral blood and bone marrow study on June 19, 1945, gave a picture of pernicious anemia going into remission, with a normocytic, normochronic anemia, mild leukopenia, relative lymphocytosis, decreased platelets, macrocytosis, polychromatophilia, and hypersegmentation of polymorphonuclear leukocytes. Repeat gastric analysis showed an achlorhyria. The duodenal contents showed definite tryptic activity.

At this time it was decided to attempt to induce a remission in order to employ lipocaic. Accordingly, the patient was placed on a high fat diet. and all medications were stopped. Because of the severe anemia, it was deemed necessary to administer two transfusions of 500 c. c. each of compatible whole blood.

By June 30 the patient was having an exacerbation, with six or seven stools daily. Lipocaic was administered 10 grams twice daily. No untoward effects were experienced. After three days of therapy, the diarrhea ceased. On July 5, there developed a severe glossitis and stomatitis with moderately severe dysphagia. This gradually subsided over a period of four days. On July 6, the red cells numbered 2,700,000, with 64 per cent hemoglobin. He "felt better than he ever had." Pigmentation cleared. The stools changed to brown, were no longer foul, and were of normal consistency. The sallow color of the skin persisted. Flatulence subsided.

The patient continued to improve until July 22, at which time he went into a spontaneous remission, with four stools daily, that were pale, frothy, foamy, bulky, and very foul, with much foul flatus. This subsided in three days. At this time, a blood count showed that the red cells had increased to 3,400,000 with 64 per cent hemoglobin. Febrile and dysenteric agglutinations were negative.

The supply of lipocaic was exhausted on July 27. At this time, it was noticed that the patient's skin was definitely less sallow than on admission. He appeared still to be chronically ill, but he had gained 10 pounds in weight and was encouraged as to his condition.

The glucose tolerance curve was more flat at the conclusion of treatment than at its initiation; the blood lipids were even further reduced in value. Gastric analysis showed no free acid, but 10 degrees total acid. Cephalin flocculation was again negative. The blood cholesterol was 137 mg. per cent, phosphorus was 2.38 mg. per cent, calcium was 10.00 mg. per cent. The sedimentation rate was still slightly hypernormal at 18 mm/hr. The final blood count was 3,600,000 red blood cells, with 65 per cent hemoglobin. There was no change in the stool fat.

DISCUSSION

Dragstedt and his co-workers[23] have utilized lipocaic in the treatment of sprue without demonstrable success. This case study bears out the findings of the University of Chicago observers. However, since the amount of lipocaic available for this study was limited to a four weeks' supply, and since results in therapy with this drug are often obtained only after its administration for two to three months, it may be that prolonged, intensive treatment would have produced a more favorable response.

As for the immediate results, aside from the subjective improvement, there is little to indicate benefit from lipocaic. The severe glossitis developing six days after the drug was begun, and the diarrhea, typical of sprue, that occurred after three weeks of therapy would cause one to conclude that lipocaic exerts little protective action against exacerbation. Further, one would even question the advisability of attempting treatment with the preparation in sprue in view of the further suppression of blood lipids and the extreme flattening of the glucose tolerance curve resulting after one month's administration. It is more than likely that the clinical improvement was the result of adequate dietary factors rather than benefit from lipocaic; it was noted in the patient's history that the episodes of diarrhea frequently cleared with an adequate diet. In view of this fact and in view of the various manifestations of vitamin B complex deficiency present in this individual, one tends to conclude that this case of sprue may be related to avitaminosis B.

It has already been recounted that hyperlipemia in psoriasis and xanthomatosis frequently is reduced by lipocaic administration, and that the low blood lipids of lipocaic deficient dogs are raised when the hormone is given. The findings in this case indicating non-response to lipocaic and showing further suppression of blood lipids bring one to two further conclusions: (1) Sprue is not a manifestation of lipocaic deficiency; (2) lipocaic administration in the absence of hyperlipemia or lipocaic deficiency results in suppression of blood lipids to low levels. A similar effect has been noted by Clark et al.[2] using lipocaic in psoriasis.

The extreme flattening of the glucose tolerance curve, already noted, causes one to consider the possibility of some effect, hitherto not noted, exerted by lipocaic on the metabolism of carbohydrate.

SUMMARY AND CONCLUSIONS

1. A case is reported of lipocaic in the treatment of sprue.

2. The findings in this case indicate that:

(a) Lipocaic exerts no curative action in sprue, nor does it protect against exacerbation of the disease.

(b) Lipocaic is probably contraindicated in the treatment of sprue.

(c) In the absence of lipocaic deficiency and in a state of hypolipemia, administration of the drug leads to further depression of the blood lipids.

(d) Lipocaic may exert some effect upon

the metabolism of carbohydrates, evidence by extreme flattening of the glucose tolerance curve after a course of therapy.

(e) Sprue is not a manifestation of lipocaic deficiency.

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SCHISTOSOMIASIS (MANSON'S)

PRESENTATION OF TWENTY-FIVE CASES

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INTRODUCTION

Schistosomiasis (Manson's) is a disease which is confined to definite endemic regions by the life cycle of the parasite. The importance of this disease in other regions has increased during World War II, as members of the Armed Forces returning from endemic areas may be infected.

It is not deemed necessary to review in this paper the life cycle of *Schistosoma mansoni*, the symptoms, physical findings, or diagnosis of the disease. These have been adequately discussed in textbooks of tropical medicine and in current literature.

The purposes of this review are threefold. The most important object of the study is to determine whether or not any of the cases in Gorgas Hospital could have contracted the disease in the Canal Zone. Secondly, the clinical findings are reviewed in an attempt to establish the symptomatology and severity of the disease as seen here. The third purpose is to evaluate the efficacy of the various drugs used in the therapy of the disease.

All cases in this series were infected with *Schistosoma mansoni*.

SOURCE OF MATERIAL

Twenty-five cases of schistosomiasis caused by *Schistosoma mansoni* have been diagnosed antemortem at Gorgas Hospital in the period between 1923 and April, 1945. There has been a sudden increase in the number of cases recognized since the onset of World War II. Twenty-one cases, or 84 per cent, have been diagnosed since 1941 and of these 76 per cent occurred during 1944. As the majority of these patients were originally from Puerto Rico, which is an endemic area for the disease, the obvious explanation of the sudden increase is the influx of Puerto Rican soldiers during this period.

All of the patients were males; 21 foreign whites and four negroes. Ages ranged from 20 to 37 years. Twenty patients were Puerto Ricans who had been in the Canal Zone from a few hours to a maximum of 13 months, with an average stay of four months. It was impossible to obtain from most of the hospital charts information as to what part of Puerto Rico they originated. Of those patients who were not from Puerto Rico there were two from Saint Lucia, one from Martinique, one who probably contracted the disease in Arabia, and one from Panama. The patient in whom infection could possibly have been contracted in Panama was a 23 year old Panamanian who had spent the first year and a half of his life in Trinidad. Whether or not his schistosomiasis was chronic since childhood and asymptomatic until the age of 23 is questionable, but possible. This is the most probable explanation, as the species of snail proved to be the intermediate host has not been found in this region.[1] Of the series of cases studied there were none who had lived exclusively in the Republic of Panama or in the Canal Zone.

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CLINICAL CONSIDERATIONS

The chief complaints and presenting symptoms were varied, but the majority were related to the gastrointestinal tract. The most frequent complaints were mild diarrhea and abdominal cramps or discomfort of a few days' duration. This was often preceded by a few weeks or months of vague abdominal discomfort, epigastric distress, loss of appetite, and occasional bouts of diarrhea. Eleven cases, or 44 per cent, were admitted for treatment of diseases other than of the gastrointestinal tract, and schistosomiasis was diagnosed by routine stool examination. Eight patients presented severe diarrhea as their chief complaint, four had rectal bleeding, one complained of melena, and three had vomiting prior to admission. In view of the fact that only one-third of the cases showed the typical picture of diarrhea it is important to remember that infection with *Schistosoma mansoni* must be considered in any person coming from an area endemic for that disease, especially those complaining of vague abdominal distress.

Abnormal physical findings were absent in most patients. The majority had only mild abdominal distention and slight tenderness on deep palpation over the lower abdomen, often along the course of the descending colon. The liver was palpable in only two patients, and in neither was it greatly enlarged. Skin rashes were absent.

Proctoscopic examinations were performed on 16 patients. Normal appearing rectums and sigmoids were observed in only three patients, or 18 per cent of those examined. In the others the most frequent findings were small hemorrhagic spots along the course of the smaller vessels in the rectum and lower sigmoid, or a finely granular bowel wall with no ulcerations. Small white macular raised lesions, which were firm and non-bleeding, were noted scattered along the course of the small vessels in one patient. In another patient several perianal papules and small papular masses just within the anal opening were observed. Polyps were noted in two patients. One was 3.0 mm. in diameter and located 3.0 cm. from the anal opening. The other was of similar size and situated 10.0 cm. from the anus. In both patients having polyps there had been repeatedly negative stools for *Schistosoma mansoni* and a diagnosis was made on biopsy of the polyps. Microscopic examination of the biopsy material showed a low grade inflammatory reaction and fibrosis surrounding several outlines of the ova of the parasite in the mucosa of the bowel.

LABORATORY DATA

All cases were diagnosed by stool examination, with the exception of the two diagnosed by biopsy of polyps. Diagnosis was made on the first stool examination in 16 patients and in the remaining the number of stools examined varied from two to 18 specimens before ova were found. In the two most recent cases the stool was examined repeatedly using different technics on each specimen in order to determine the most satisfactory method of obtaining positive results. Brine flotation, De Rivas concentration, and water separation were used as methods of concentration. The following method gave the best results: A portion of stool the size of a pea was mixed with 10 c.c. of water and this was allowed to stand until settled and the supernatant fluid removed. To the remaining sediment ten parts of water were added and the mixture allowed to stand overnight. The sediment was then examined for ova and the supernatant fluid for live miracidia.

Other parasitic ova or larvae found on stool examination were: *Trichuris trichiura* ova in seven patients, *Strongyloides stercoralis* larvae in four patients, *Necator americanus* ova in three patients and *Taenia saginata* ova in two patients. Bacillary dysentery was found in one patient and two patients were diagnosed as having amebic dysentery. All patients had negative stools for *Schistosoma mansoni* at the end of therapy.

Eosinophilia was not marked in this series; a variation was noted ranging from 1 to 35 per cent of the total leukocyte counts. The average eosinophil count was 6 per cent and only seven cases showed more than 10 per cent. The leukocyte count was normal in those patients who had no disease other than schistosomiasis. Anemia was not a constant feature.

Precipitin test for *Schistosoma mansoni* was done on two patients. One gave a negative result and the other showed a positive test in dilutions of 1 to 12,800. The patient who had the positive precipitin test also had a 4 plus skin test for this disease.

THERAPY

Sixteen patients were treated for schistosomiasis while in the hospital; 11 received tartar emetic, two fuadin, two emetine hydrochloride, and one neostam and oral emetine hydrochloride. Four patients, or 16 per cent, had received previous therapy for schistosomiasis. One had been treated with fuadin, two had received fuadin and emetine, and one had been given emetine. The patient receiving the most therapy before admission to this hospital had received six courses of fuadin and two of emetine in Puerto Rico prior to coming to the Canal Zone. These cases are too few to arrive at any conclusions as to the comparative efficacy of the drugs used. However, it may be assumed from the patients previously treated that fuadin and emetine were not completely effective.

The total dosage of tartar emetic varied from 14 grains to 30 grains. In those patients who received less than 30 grains the drug was discontinued because of toxic reactions. Dyspnea following injection was observed in three patients, two had vomiting, one showed cyanosis, shock, and vomited blood, and another patient complained of severe pain along the course of the vein being injected. All of the reactions occurred shortly after an injection, usually when the maximum dose of 2.5 grains was given. Electrocardiographic changes of depressed T waves in all leads were noted twice in the five patients who were followed in this manner. The dosage of the drug varied slightly but generally it was given on alternate days, the initial dose being 0.5 grain and increasing each dose by 0.5 grain until a maximum of 2.5 grains was reached. This dosage was continued during the remainder of the treatment.

Fuadin was administered intramuscularly to a total of 45 c.c. in one patient and 65 c.c. in another. In neither were any toxic manifestations noted. The drug was given in doses of 1.5 c.c. initially, 3.5 c.c. the second day, 5 c.c. the third, and 5 c.c. every other day thereafter. The patient treated with 45 c.c. showed positive stools for *Schistosoma mansoni* until 40 c.c. had been given, after which time the stools were repeatedly negative.

In the two patients treated with emetine hydrochloride no toxic reactions were noted. The drug was given subcutaneously in doses of 0.5 grain twice daily. One patient received 10 grains and the other 7 grains.

The one patient treated with neostam

was given an initial dose of 0.05 gram per 100 pounds of body weight with a daily increase of 0.05 gram per 100 pounds of body weight until the sixth day, at which time a maximum dose of 0.3 gram per 100 pounds body weight was given. This daily dose was to be maintained until 2.55 grams per 100 pounds of body weight had been given. However, after receiving slightly less than one-half (1.3 gram) of his total requirement (3 grams) he developed severe abdominal cramps and vomiting, about thirty minutes after each injection. This was accompanied by a mild leukopenia and neutropenia and therapy was discontinued. Coincidental with his toxic reactions amebic dysentery was diagnosed. It was decided to treat the amebiasis with oral emetine hydrochloride and at the same time observe the effects of the oral drug on schistosomiasis. Emetine hydrochloride enseals were given in dosage of 2/3 of a grain three times daily for twelve days, or a total of 24 grains. At the end of therapy proctoscopy and stool examinations showed disappearance of amebae but persistence of the ova of *Schistosoma mansoni*. The patient was then continued on a more prolonged course of neostam in doses of 0.2 gram every other day. No toxic symptoms were observed.

SUMMARY

Twenty-five cases of infection with *Schistosoma mansoni* are presented.

All of the cases originated elsewhere, with the majority coming from Puerto Rico.

Schistosomiasis (Manson's) must be considered in all persons in or coming from an area known to be endemic for this disease, especially if the patient presents gastrointestinal symptoms.

Oral emetine hydrochloride in the dosage given to one patient was not effective against *Schistosoma mansoni*.

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MULTIPLE COMMON BILE DUCT STONES*

REPORT OF A CASE WITH TWENTY-SIX OXALATE STONES IN THE COMMON DUCT

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There is perhaps no field of surgery that has been the subject of more controversy and the object of more detailed and careful study than that of the biliary tract. Although most of the earlier work was done on the gallbladder as the primary focus, it was not until the entire biliary tract was considered as one physiologic unit that the real progress in the understanding of the pathology and institution of rational therapy was made. With these advances common duct surgery has lost most of the risk that previously attended it. Lahey[1] has stated that common duct exploration has not appreciably increased his mortality rate in gallbladder surgery—this has been the experience on our surgery service also. Outstanding contributions to our present methods were made by Judd,[6] Bakes,[2] and Cheever.[3] Cattell[4] has recently reiterated the Lahey Clinic indications for common duct exploration. The fact that patients are presenting themselves sooner is one of the reasons for the relatively small number of postoperative complications now attending biliary tract surgery. In 1935 Lahey[1] showed that 46 per cent of his patients were presenting themselves before symptoms had been present for one year—this has not been true on our service. Boyce's[5] excellent work has added greatly to the understanding of the pathologic physiology in these cases and has contributed greatly to the reduction in the occurrence of the hepato-renal syndrome, the most dreaded complication of biliary surgery.

The occurrence of multiple stones in the common duct is not too rare, although most commonly only one stone is present; and when multiple stones are found, usually only two or three are present. Judd[6] reported a case with seventeen stones in the common duct in a patient who had had a previous cholecystectomy. Best and Hicken[7] show a cholangiogram in a patient with eleven common duct stones.

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Over 95 per cent of stones found in the common duct are formed in the gallbladder. In the presence of stasis and cholangitis stones can form in the common and the hepatic ducts.[8] Stones formed in the ducts contain only pigment and are not calcified. It is only recently that we appreciate that stones can be present in the common duct without jaundice in over one-third of the cases.[1,9] The most dangerous preoperative complication is the development of a suppurative cholangitis, which can occur even though the patient is on a closely supervised medical regimen. Cole[10] brings out the very excellent diagnostic point that if a patient has chills for over three days she probably has a suppurative cholangitis and drainage should not be delayed. Only 4.2 per cent of Lahey's[1] cases had chills and fever.

The case presented below is of interest both from the viewpoint of duration of the disease and the rare pathology present.

CASE REPORT

Mrs. M. D., a 69 year old white female, entered the Charity Hospital medical ward on January 2, 1945 complaining of cramping pain in the abdomen and nausea and vomiting of one week's duration. The pains were localized in the epigastrium and radiated around her right costal margin to her right shoulder blade. The pains would last one to three hours. At the age of seven she had an attack of chills and fever accompanied by jaundice which was treated with quinine. The chills and fever stopped, but the jaundice recurred the next month, and was again controlled by quinine. She remained well until she was 16 years of age, at which time she had an attack almost identical to that she is having at the present admission. She was jaundiced, and a diagnosis of "bilious colic" was made and she recovered on medical therapy. She continued to have many attacks thereafter especially after fatty foods and after eating boiled cabbage; some of these attacks were accompanied with moderate transient jaundice. During this time she had been under the care of a great many different physicians all of whom treated her only for her acute attack and were not interested in following her between attacks. In 1937, she again had a severe attack of colic accompanied by jaundice which was diagnosed by her local physician as gallbladder disease. He told her she was too old to be operated upon and put her on a diet and followed her between attacks. She remained relatively well as long as she stayed on her diet, but was always uncomfortable if she broke her diet.

The positive points in her past history include: tularemia in 1935, influenza in 1919, "facial stroke" in 1930, and "high blood pressure" since 1936. She had nine normal deliveries. Her husband and four of her children died of pulmonary tuberculosis.

Physical examination on this admission showed: pulse 100, temperature 100, blood pressure 160/80, and respirations 20. There was icterus of both the skin and sclerae. Advanced dental caries were present. The lungs were normal and the heart was enlarged to the left with a loud precordial murmur, presystolic. The abdomen was not tender and there were no masses. There was a third degree cystocoele and rectocoele present. A small subcutaneous tumor was on the back.

Laboratory work: Blood count and urine were normal. Icterus index was 20.8 but the blood was hemolyzed. Repeat indices varied between 8.3 and 11.8. Serology was negative. Intravenous hippuric acid test—0.62 grams sodium benzoate detoxified. B.U.N.-11.8 and P.S.P. was 52 per cent. Cholecystogram on January 4, 1945 failed to reveal the gallbladder. It was repeated with the same result.

She was placed on low fat diet and given tincture of belladona and was discharged from the medical ward (January 15) to be followed in the medical clinic.

She was readmitted 13 days later (January 28) as an emergency to the surgery service. She was having another acute attack of colic with mild jaundice. Her attack quickly abated. She consented to be worked up for surgical therapy. Laboratory work on this admission showed: red blood cells 3,800,000; white blood cells 10,700, 74 per cent polys, urine showed free bile and urobilinogen. Cholesterol was 185; serum protein 6.25. Icterus index was 25. Cephalin flocculation was negative. Intravenous hippuric acid test showed 0.662 grams of sodium benzoate detoxified. Fluoroscopic examination of the chest showed enlargement of the left ventricle and aorta. Gastrointestinal series were negative. Electrocardiogram showed an incomplete right bundle branch block and definite evidence of myocardial disease compatable with left ventricular hypertrophy.

A diagnosis of chronic cholecystitis with cholelithiasis and choledocholithiasis was made and she was scheduled for elective operation.

On February 11, 1945, she developed another attack of acute colic accompanied by definite right upper quadrant tenderness and muscle splinting. She vomited almost continuously and would not respond to antispasmotics at all. She was taken to surgery as an emergency that night still in severe colic seven hours after the onset of the attack.

Under ethylene and ether vapor anesthesia she was explored through an upper transverse incision. The liver was grossly normal. The gallbladder was very distended and tense, and contained several stones impacted in the cystic duct. The common duct was exposed and was dilated to a diameter of about 2 1/2 cm. It contained several freely movable stones. The pancreas showed some induration. The gallbladder was removed after all of the essential duct and vascular structures were exposed. The common duct was then opened and twenty-six well formed, very hard stones varying from 5 mm. to 2 cm. in diameter were removed. None of these stones were impacted, and about half of them were in the hepatic ducts. There was no obstruction at the ampulla and a number 18 catheter was readily passed into the duodenum. The ducts were then thoroughly irrigated and considerable gravel was washed out of the hepatic ducts. A Maingott T tube was placed in the common duct and held in place with 000 chromic catgut. The abdomen was then closed in layers, using interrupted quilting cotton sutures throughout.

Her postoperative course was excellent except for her second day when she developed some cardiac arrhythmia, but this quickly cleared up and no difficulties were encountered. Her T tube was removed on February 27, after a lipiodal cholangiogram proved to be normal. Her clinic follow-up has shown no complications. The patient states that she feels better than almost as long as she can remember.

Chemical analysis showed the stones to be the oxalate type.

DISCUSSION

In analyzing this patient's history we find that she has been having intermittent jaundice for 62 years of her 69 years. Her first attack probably was malaria, but the attacks following that most certainly were due to biliary tract pathology. Despite the long duration of gallbladder pathology, her liver function has remained fairly good as shown by the hippuric acid test. She never seems to have developed a complete obstruction to her common duct and her acute attacks seem to be due to the passage of stones through the cystic duct. This woman has been under the care of many physicians during her long illness and yet not one of them suggested surgical therapy to her. Even our own medical department believed her too old to consider a surgical opinion. This certainly illustrates that there is still considerable reluctance on the part of the profession to recommend operation for chronic biliary tract disease. There can be no question that operation was attended at a much greater risk to the patient at this time when an emergency operation had to be done, than eight years ago when her doctor considered her too old for an operation.

On careful medical management many of these patients say they are free of symptoms, but as this patient expressed it she now felt better than almost as long as she could remember. In other words these patients learn to tolerate moderate discomfort and pass that off as the way they would normally feel; and it is not until their pathologic gallbladder is removed that they realize that they really had not been free of symptoms during their apparent remissions. We have found this to be true of many of the patients we have followed in our clinic.

The occurrence of oxalate stones in the biliary tract raises another problem. Presumably they should not form in the alkaline fluids present. The laying down of calcium salts has been shown to be due to obstruction to the cystic duct.[8,11,12,13] We have carefully checked the analysis of these stones and can offer only the following explanation for their formation: during her long illness at some time or other she developed a biliary tract infection which acidified the contents of her gallbladder and this made possible the deposit of oxalate salts in these stones.

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INFECTION—AN ETIOLOGIC FACTOR IN DIABETES MELLITUS

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The following cases are presented to show the reaction in diabetes mellitus when foci of infection have been removed. In each of these cases the glucose tolerance test showed return to normal after treatment in this manner. It can be well appreciated that this small number of cases is no criterion for proof. However, results were so satisfactory that they were thought worthy of reporting at this time.*

CASE No. 1

Mrs. L., a white female, 71 years old, a known diabetic for the past fifteen years, used various kinds of supports to walk; her vision was becoming progressively worse, and she found it difficult to rest at night due to pain in the lower extremities and in the sacro-iliac area. Exertion caused marked dyspnea; she was not comfortable unless she slept on several pillows. She complained of palpitations and frequent attacks of dizziness. Roentgenograms revealed evidence of hypertrophic arthritis. The blood sugar reading was 210 mg. per 100 c. c. (fasting blood sugar); after being on a limited diet the reading was 180 mg. at the end of the third hour. Ophthalmic examination revealed multiple retinal hemorrhages. This patient had been on a limited diet with 30 units of protamine zinc insulin daily. Roentgenograms of the jaw edges showed many areas of necrosis of the bone. On November 5, 1945 these areas were opened and curetted. Twenty-four hours later the fasting blood sugar was 62 mg. per 100 c. c.; November 9 it was 110 mg., and on November 12, 96 mg. The glucose tolerance test made November 15 was as follows:

Fasting	71 mg.
1	250 mg.
2	177 mg.
3	84 mg.

On the third postoperative day the patient was able to walk unsupported, and was not troubled at night with pain in her lower extremities. Dyspnea was no longer present, attacks of dizziness had disappeared, as well as the heart palpitations. Her vision improved.

CASE No. 2

Mrs. V., is a white female, 46 years of age, whose chief complaint was loss of weight. A physical examination revealed no significant findings except marked infection about the lower teeth. Fasting blood sugar was 180 mg. After a limited diet it fell to 148 mg. She had been on 20 units of protamine zinc insulin daily, yet she failed to gain weight or to feel well. A roentgenogram revealed infection of the mandible. Under local anesthesia the infection was eradicated. Forty-eight hours later the blood sugar reading was 68 mg.; two days later, 84 mg. The glucose tolerance curve done two weeks later revealed the following findings:

Fasting	94 mg.
1	210 mg.
2	186 mg.
3	92 mg.

CASE No. 3

Mrs. R., a white female, aged 21, complained of fatigue, loss of weight, listlessness, and lack of interest in her surroundings. There were no significant physical findings except for one badly cavitated tooth and another fitted with a gold crown. Roentgenograms revealed marked infection about the roots of these teeth. Fasting blood sugar was 168 mg. The patient was advised to have one tooth extracted and the crown removed from the other. This was done and within 48 hours the blood sugar dropped to 62 mg.; two days later it was 88 mg. After eating a full breakfast it rose only to 112 mg. The patient did not return for a tolerance check. She has gained six pounds since the tooth extraction.

COMMENT

It should be repeated that these cases were considered worthy of presentation because they were all proved diabetics, whose glucose tolerance curves returned to normal after removal of the foci of infection. Postoperatively, the patients were no longer on restricted diets and discontinued insulin. They showed other signs of improvement: gain in weight, improved vision, and a feeling of well-being, which boosted their morale. How long such an improved state will persist is not known. However, its existence is noteworthy. The relationship between the secretions of the islands of Langerhans and the infection was not clarified, and needs delving into.

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*Other cases will be reported on in the near future.

PATHOLOGY OF BOECK'S SARCOID

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INTRODUCTION

A discussion of this topic was undertaken with several concepts and designs in mind. An attempt has been made to find and describe in some orderly sequence the etiology, pathology and clinical findings of the disease, and present it in such a manner that essential items and facts which are necessary for the recognition of the disease will be retained by the readers. Although the disease is a relatively rare clinical finding, nevertheless it is a distinct clinical entity and as such should be borne in mind in differential diagnosis.

The disputed and complex subject of the etiology has been investigated and its various aspects will be presented. I have merely reviewed the literature and my conclusions are governed accordingly.

HISTORICAL

Jonathon Hutchinson, in 1869, observed a patient with purplish raised lesions on the skin of the front of the legs and on the fingers, which were neither painful nor tender. Hutchinson recorded the case in the literature in 1875. In 1889, ten years before Boeck, Besnier described a skin lesion which he called lupus pernio. In 1899, Caesar Boeck described the morbid histology of the skin. In 1902 Kienbock, a radiologist, described curious "cysts" in the bones of the toes of a 27-year-old patient — his findings were credited to syphilis which was also present in this individual. Kriebich, in 1904, definitely associated similar lesions with lupus pernio. In 1910, Rieder described similar findings in the bones of the toes. In 1915, Kuznitsky and Bittorf reported a case of skin "sarcoid" with visceral involvement. Schaumann, in 1917, described in detail histologic appearances in lymph nodes and osseous lesions in lupus pernio. Jungling (1919) described again the cystic changes in bone and called the lesion "osteitis tuberculosa multiplex cystica." Numerous articles have appeared since this time dealing with the varied phases of the subject.

Various names have been applied to this disease, a few of the more important ones follow: Boeck's disease, Besnier's disease, Besnier's Boeck's disease, Tenneson's disease, benign lymphogranulomatosis, sarcoid, multiple benign skin sarcoid, osteitis tuberculosa multiplex cystica, miliary lupoid, lupus pernio, Mortimer's disease, and Schaumann's disease.

ETIOLOGY

1. Many attempts have been made to link the disease with tuberculosis in some form. Boeck, in 1905, thought the etiologic agent was benign tuberculosis. In 1917 Schaumann linked the cause of the disease with benign tuberculosis of bovine type. Kyrle, of Germany, considered sarcoidosis as a foreign body type of reaction due to disintegration products of the tubercle bacillus. Ray and Shipman have suggested that the lipoids of the tubercle bacillus are the etiological agents. In 1938, Max Pinner[8] stated very definitely that the etiology was the same as pulmonary tuberculosis, the difference in the two diseases was to be found in the fact that tubercle bacilli could be isolated and stained in sections made in the early stages of sarcoidosis, and that as the lesions aged the bacilli were removed by some mechanism of the pathologic process and could no longer be found. Kravity[4], in 1941, says that the tubercle bacillus plays no part in the disease although frequently the two diseases may be found in the same person. The consensus at the present time seems to be leading away from the idea that the tubercle bacillus is responsible.

2. It has been suggested that a nonspecific tissue response which may be evoked by a variety of pathogenic agents, such as leprosy, syphilis, leishmania, yaws, brucellosis and lymphogranuloma venereum, is responsible (Levitt[5]).

3. This disease, Boeck's sarcoidosis, should be considered as a type of lymphoreticular (reticulo-endothelial) tissue comparable to Hodgkin's disease, and leukemia,

and should be called a reticulosis (Pullinger and Ross).

4. Frazier and Hu consider that luetic involvement is the usual etiology. However, the question has been raised as to whether or not the disease once started gives rise to a false positive Wassermann reaction. Many observers are of the opinion that just such a reaction occurs.[5]

5. Kiss-meyer and Nielson suggest that a virus which causes infectious granuloma of a chronic nature is to be strongly considered.

6. Neoplasm — (Spiegler-Fendt type of sarcoid).[4]

INCIDENCE

Until February of 1944, 44 cases had been described in the literature.[9] The majority of the reported cases occur in females, the white race seems to be more frequently afflicted. The age of the victims varies from 60 days to 67 years, with the average lying between 20 and 40 years. Social status seems to have only a very limited effect, if any at all.

PATHOLOGY

The histopathology of the variously located lesions of the disease is uniformly constant and it might be well to begin a discussion of the pathologic picture with the histology. It is understood, of course, that the lesions vary in their histologic nature with the usual findings of the tissue which has become affected. These lesions appear as collections of large epithelioid cells arranged in the form of miliary tubercles, sometimes lying as isolated structures, in a normal tissue, and again as strands or groups of cells. Such cell collections may almost completely replace the normal tissue. They are not, as a rule, outlined by a row of lymphocytes as a zone of inflammatory change, although in some cases lymphocytes may be found. In Boeck's sarcoid the absence of inflammatory changes is a characteristic finding. Occasionally one or more large giant cells may be found in the center and more rarely in the periphery of the tubercle. There is a marked absence of caseous material, calcification and necrosis in general. The lesions closely resemble an epithelioid miliary tubercle. There is a marked tendency toward fibrous degeneration. The histologic picture which has been described here is usually maintained in the tissues for a long while, and in the terminal stages of the disease may either regress through a fibrous reaction or may kill the patient by virtue of its location in or around vital organs.

HEMATOLOGY AND TUBERCULIN REACTIONS

There is usually a slight anemia, an eosinophilia, the erythrocyte sedimentation rate is increased and the serum proteins are found to rise to levels of 9.0 to 9.6 grams per cent. During the early stages of the tubercles there may be found a monocytosis in the peripheral blood which is due to the excitaton of the reticulo-endothelial system; this is, however, a transitory finding and is generally absent in the later stages of the disease.

It has been noted by many observers that the tuberculin reaction becomes negative in those who have the disease in its later stages. Even in those persons who have a positive reaction to the antigen of tuberculosis in the early stages of the disease, the reaction gradually becomes less intense in positivity and toward the end of the disease the reaction is almost one hundred per cent negative.

GROSS PATHOLOGY

According to Hannesson[2] the most frequent sites of involvement are lymph nodes, lungs, liver, spleen, and bone marrow, with the skin being more frequently involved than any other organ.

Hutchinson's original account of the disease dealt with unknown lesions of the skin which brought the patient to the attention of the doctor in the first place. The lesions of the skin may be variously described. The first class of skin lesions is the so-called lupus pernio. These lesions are most frequently found on the nose, cheeks, lobes of the ears, fingers and toes, as reddish infiltrations of the skin localized in the subcutaneous tissue. The border of the lesion is usually sharp. The second class is the so-called miliary lupoid, which is an eruption of fine red papules on the cheeks, forehead, extensor surface of the arms, buttocks, and the back. The papules may be smooth or there may be hyperkeratosis. Others may be similarly located and nodular. They may scale although they never ulcerate. Central flattening may cause an annular appearance. In these annular lesions telangiectasis and pigmentation are common. The third class is the angio lupoid. This form is less common and consists of soft areas by the base of the nose which are markedly telangiectatic. The fourth and last class is called erythrodermie sarcoidique. The lesion here consists of large serpiginous areas on the thighs and the front of the legs.

A most important category of the lesions of sarcoidosis is lymphadenopathy and splenomegaly. The enlargement of the lymph nodes is one of the most characteristic findings. The enlargement may be local to a given area or it may be generalized, a generalization of the lesions is more common than a local lesion. It should be mentioned that one of the chief manifestations of the disease is the acute distress due to pathologic physiology which is brought about through the presence of the tubercles in or around vital organs, although as we shall presently see this is not the only way in which symptoms may be brought about. A common site of involvement is the glands in the hilum of the lungs. Abdominal nodes are probably enlarged also but by usual palpatory methods the detection of the abdominal nodes is very difficult. The enlarged nodes are smooth, painless, and insensitive, discrete and freely movable, assuming, of course, that the lesions of sarcoid are not involved in secondary inflammatory changes. Splenomegaly is one of the most outstanding signs of the disease. The enlargement is almost uniformly present and the size is very large.

In a consideration of the pulmonary lesions many different phases come under consideration. The periadventitial cells of the smaller arteries in the interalveolar septa are active elements of the reticulo-endothelial system. The sarcoids may frequently be localized in the lungs, that is, in the parenchyme proper. The bronchial nodes are very commonly involved. Peribronchial nodes are even more frequently involved. In some cases a reticulated appearance of the lungs may be found. X-ray shadows usually extend from the roots of the lungs toward the bases and not in the direction of the upper lobes or apices. The miliary lesions may result in the volume of blood passing through the lungs becoming reduced and the right ventricle has to overcome this resistance. In these cases dyspnea and cyanosis are common; the right ventricle enlarges and progressive myocardial damage occurs. However, pulmonary symptoms may be minimal and the x-ray examination shows massive invasion of the lungs. Several radiological appearances have been noted. There may be enlargement of the hilar nodes with compression of a bronchus and this in turn may lead to an atelectasis of this part of the lung. At times a chronic interstitial fibrosis occurs. And lastly, there may be developed multiple miliary foci. Longcope and Pierson[6] report that in several of their cases which have been followed over a long period of time, a regression of the nodes which were originally picked up by roentgen examination.

The reticulo-endothelial system of bone is another site of predilection for development of Boeck's sarcoidosis. Nielson estimates that bone lesions are found in 20 per cent of cases. The characteristic changes nearly always develop in the phalanges of the toes and the fingers but in rare instances long bones may become affected. Sanes and Smith,[10] in 1934, reported a case in which the typical cystic lesions were found in the long bones of the lower extremities, the tibia and the fibula. However, this particular patient had a history of an active tuberculous process of the lungs and there seems to be some doubt as to whether or not this was a lesion typical of Boeck's sarcoid. Areas of bony involvement may also be accompanied by cyanosis and occasionally by a bluish red discoloration. There may be no evidence of active disease other than a clubbing and broadening of the ends of the fingers. Usually joint involvement is not painful although in some cases the opposite may be the case. In advancing cases of the disease malformations and mutilations of marked degree are common. The periosteum and joints are spared in a process which causes extensive damage to the medullary portions of the phalanges. The normal bone is replaced by a lace work structure with small areas of rarefaction surrounded by areas of increased density. The change is not cystic but is rather a granulomatous infiltration into the medullary canals with destruction of portions of the medulla. The pathological process begins in the marrow always. There may be two types of bone change: (1) multiple, circular punched out areas of rarefaction and reticulation; (2) there may occur a general atrophy of the skeleton of the hands and the feet.

Last but certainly not least by any means are the lesions of the eye and the orbit which this disease gives rise to.[5] According to Snapper and Pomper a great number of the victims of the disease present themselves to the ophthalmologist first because of the frequency of eye lesions. In the opinion of Hannesson the incidence is in the neighborhood of 10 to 30 per cent. Cutaneous lesions may present themselves on the eyelids and may be localized or may be only a manifestation of the generalized sarcoidosis. The lacrimal glands are susceptible of involvement. Conjunctival and corneal lesions are extremely rare. Keratitis filamentosa is an infrequent complication of Boeck's sarcoidosis, resulting from lacrimal involvement which causes a sparsity of secretion. Of the various parts of the uveal tract, the anterior portion is most commonly involved. Usually a painless chronic plastic iridocyclitis, with little or no pericorneal infection, a marked descemetitis exudation into the anterior chamber, multiple synechiae and most frequently iris nodules occur. Both eyes are usually involved. The association of the lesion with parotid enlargement, accompanied by facial paralysis forms the uveo-parotid syndrome or the so-called uveo-parotid fever. A spontaneous remission may occur or the lesions may progress to phthisis bulbi and blindness of one or both eyes is the result. Iritis is common. The lesions are very similar to tuberculosis and a clinical diagnosis can only be made by finding other systemic manifestations of the disease. Lesions of the choroid, retina and optic nerve are very infrequent. Lesions of the optic nerve when present are seen as papillitis accompanying uveitis or as papilledema of the optic nerve, and atrophy secondary to intracranial localization.

As a concluding word, the various positions of the lesions in the body might well be enumerated; lesions have been found in the parotids, hypophysis, breast, mucosae of the pharynx and the larynx, knee joint, nervous system (with the basal portions of the brain predominating in frequency). Nickerson,[7] in 1938, reported lesions in the myocardium, endocardium, pancreas, testis, vertebral and femoral marrow. Also in 1938, Spencer and Warren[11] reported lesions in the kidney and in the thyroid gland for the first time.

SUMMARY

An attempt has been made to review the later publications dealing with Boeck's sarcoidosis. A brief but complete historical account has been made. The moot subject of etiology has been brought to the front, the opinions of the various authors and investigators have been mentioned. The gross and microscopic pathology as well as the most common sites of lesions have been presented.

CONCLUSIONS

1. Boeck's sarcoid is a rare disease which should be suspected whenever lymphadenopathy of unexplained origin is encountered.

2. The etiology of the disease remains unknown.

3. The histopathologic picture of the

lesions, irrespective of their location is identical.

4. Diagnosis can only be made positively by microscopic examination of biopsy sections.

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EXTRA-INTESTINAL AMEBIASIS AND ITS DIAGNOSIS*

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According to Craig, the geographic distribution of amebiasis is probably worldwide, for wherever infection with *Endamoeba histolytica* has been looked for it has been found. Amebiasis is much more common in tropical and subtropical areas. However, in districts of poor sanitation with temperate and cold climates, the incidence of infection may be surprisingly high. It has been estimated that from 5 to 10 per cent of the population of this country is infected with *Endamoeba histolytica*.

Amebiasis merits far greater attention than is usually given to it for several reasons. In the first place it is much more common than is generally believed. It may give rise to very serious symptoms and be disabling; or, as a result of one or more of its numerous complications, it may be the direct cause of death. The likelihood of occurrence of these dangerous complications seems to be roughly proportional to the chronicity of the disease. Amebiasis is amenable to treatment and can usually be cured by modern methods of therapy.

Endamoeba histolytica is capable of invading practically all of the organs and tissues of the human body. Such invasion nearly always takes place from the intestinal tract where the primary infection occurs. These extra-intestinal sites of metastases are quite numerous and constitute some of the most important and serious disease states, producing both medical and surgical problems. Various diagnostic problems may be created as a result of amebic involvement of distant organs. However, if the physician is cognizant of this fact; and if he gives due consideration to the numerous available laboratory procedures which have proved so helpful in the diagnosis of extra-intestinal amebiasis, he will find the diagnosis quite easy in the majority of cases.

Thus, it seems justifiable to attempt a discussion of these extra-intestinal lesions and to present the findings accumulated from the literature which have proved to be so helpful in directing the physician's attention toward the correct diagnosis. It is quite impossible to relate in detail all the interesting and important facts concerned with each type of lesion. Therefore, the greatest part of this paper will be devoted to the most frequently encountered organ lesions due to infection by *Endamoeba histolytica*. These will be considered in detail, whereas the less common lesions warrant only a brief discussion. A number of the reported extra-intestinal complications are so rare as to be considered medical curiosities.

AMEBIC HEPATITIS AND AMEBIC HEPATIC ABSCESS

The most important and by far the most common of all the complications of amebiasis is amebic infection of the liver. It is difficult to determine accurately the relative frequency of complicating amebic hepatitis and hepatic abscess in intestinal amebiasis. Statistics vary considerably and depend upon a number of factors. Statistical analysis based on postmortem cases reveals a higher incidence of this complication than those based upon clinically observed infections. In one series of 5211 fatal cases of amebiasis 36.6 per cent had hepatic abscess. Futcher reported 27 cases of liver abscess as occurring among 119 clinical cases of amebic dysentery. In Ochsner's and DeBakey's review of the literature 160 (17.1 per cent) of 1933 cases had hepatic involvement. A large proportion of liver abscesses are amebic in origin. Between 1928 and 1941, 287 patients with liver abscess were treated at Charity Hospital of Louisiana; 181 (63 per cent) were amebic abscesses while 106 (37.0 per cent) were non-amebic.

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The sex factor seems to play a definite role in the development of amebic hepatitis and hepatic abscess. Of Ochsner's and DeBakey's 181 cases 157 (86.7 per cent) were males. This is obviously due to the prevalence of amebic dysentery among the male population. The above complications usually occur during adult life. In the same series of cases mentioned above the youngest was 6 years old, the oldest 70 years old; and the average age was 40. The greatest incidence seems to be during the fourth and fifth decades.

All races are susceptible. In the tropics the Europeans are much more susceptible than the natives. This is thought to be due to the partial immunity of the native to the effects of parasite acquired by constant infection since childhood. Buchaman, of India, reported hepatic involvement in one out of every 628 native dysentery cases and one out of every 18 European cases. Ochsner and DeBakey reported 108 white cases as compared to 74 colored cases in New Orleans. Alcoholism, traumatism, exposure, improper diet, and lowered resistance seem to have a definite predisposing influence upon the development of amebic hepatitis and hepatic abscess.

Concerning the pathogenesis of liver amebiasis, amebic abscess and hepatitis are the result of the invasion of the liver by the ameba. There are three possible routes:

1. Direct extension through the bowel wall, peritoneal cavity, and capsule of the liver.

2. Extension by the lymphatic route. Most observers think this is the rarest method of spread.

3. Extension from the bowel through tributaries of the portal vein. This is generally thought to be the most common method of extension.

According to Rogers, "if amebae happen to reach some part of the liver in such numbers sufficient to cause clotting of several contiguous small veins so as to interfere with the blood supply enough to produce a small focal necrosis with consequent softening of the walls of the veins allowing escape of the amebae into the soft tissue, the commencement of an abscess results." Once the process begins, further spread of the organisms occurs along the open veins with further destruction of liver parenchyma and extension of the cavity in concentric circles until a fibrinous capsule surrounding the abscess develops.[7]

In the development of amebic hepatitis and abscess the two factors which play prominent roles are: (1) production by the amebae of intrahepatic portal thrombosis and infarction, and (2) the cytolytic activity of the amebae. The organisms lodge in the smaller portal radicals producing thrombosis with typical infection and consequent focal necrosis.

The amebae may be found in the zone of necrotic tissue adjacent to the outer dense fibrotic abscess wall. They are rarely found in an old abscess wall. The organisms are seldom found within the contents of the cavity as the abscess is usually sterile, although at times it may be secondarily invaded by streptococcus and staphylococcus. Ochsner and DeBakey reported amebae to be found in 16.5 per cent of the abscess cavities.

From the standpoint of pathology there is considerable variation in the general appearance of the liver with an hepatic abscess—depending upon the location, degree and stage of development. The liver is usually enlarged. A localized peritonitis is usually present on the surface in cases in which the abscess lies near the capsule. Adhesions to the diaphragm are present in those peripherally located abscesses in the dome of the liver. Councilman and Lefleur give three sizes in their classification of abscesses:

1. Small abscesses which are usually acute.
2. Large abscesses with a partially fibrous wall.
3. Chronic abscesses with a dense fibrous shell.

The contents of an amebic hepatic abscess tend to be rather viscous and chocolate-brown in color. Some observers have compared the abscess contents to anchovy sauce and chocolate sauce. With secondary infection the contents become purulent and may take on a greenish yellow creamy character. In the early stages the abscess wall is hardly visible. Later there is a thick fibrous tissue capsule which walls off the contents of the cavity.

Amebic abscesses usually occur in single form, although not infrequently multiple abscesses are present. They occur most commonly in the right lobe near the dome of the liver or on the inferior surface near the hepatic flexure of the colon. Ochsner and DeBakey report the following information:

1,848 (84.7 per cent)—right lobe
2,179 cases—
331 (15.2 per cent)—left lobe

1.048 (65.0 per cent)—single abscess
1,609 cases—
561 (34.9 per cent)—multiple abscesses

The diagnosis of hepatic amebiasis is frequently made from the clinical manifestations alone. The onset is variable. It may be acute, subacute, or insidious—depending upon a number of factors. The clinical manifestations of this complication may develop during or immediately following the stage of acute intestinal amebiasis, during active or quiescent periods of chronic intestinal amebiasis, in healthy carriers, or in patients who have never had dysenteric manifestations of intestinal amebiasis. Usually clinical evidence of amebic hepatitis appears early in its development. The period elapsing between the dysenteric manifestations and the onset of liver involvement is usually from one to three months but this is subject to a great deal of variation. Cases have been reported in which an amebic hepatic abscess developed 20, 30 and 43 years after the dysenteric symptoms.

It is extremely important to recognize amebic hepatitis during its early development. In the early presuppurative stage there is invasion of the liver by the amebae but there is no true abscess formation. If the diagnosis is made at this time, the institution of appropriate therapy may prevent the progression to abscess formation. The onset at this stage may be acute or chronic. In the acute form the clinical manifestations are readily evident, quite pronounced, and develop rapidly, whereas in the latter they are much less distinctive and develop more gradually. In Ochsner and DeBakey's series of 181 cases (37.6 per cent) were acute and 113 (62.3 per cent) were chronic. In the acute group the average duration was from 10 days to two weeks. In the chronic group the average was from three to six months. Wijerama found in his series of 48 cases that the duration was from three days to six months with an average of four weeks.

The clinical manifestations of amebic hepatic and hepatic abscess may be divided into two groups: (1) systemic; (2) focal. Fever is undoubtedly the most common systemic manifestation. Wijerama reported an incidence of 87 per cent in his 48 cases. Palazuelos and Lerner record an incidence of 89 per cent. Manson-Bahr reported the presence of fever in 85 per cent of 45 cases. In Ochsner and DeBakey's 181 cases, fever was the most frequent systemic manifestation—occurring in 84.5 per cent. There is great variation in the character and degree of pyrexia, depending upon the type of onset and the presence or absence of secondary infection and other complications. In the acute forms the fever is high and intermittent or recurrent, whereas in the chronic type it may even be absent. Usually the fever is of a low grade type and intermittent in character. Definite hyperpyrexia which is septic in type usually indicates secondary infection.

Other systemic manifestations are weakness, loss of weight, anorexia, diarrhea, chills, and profuse perspiration, nausea, and vomiting, sallowness, and jaundice. These are largely dependent upon the extent of hepatic involvement and the development of secondary infection. Weakness and weight loss are usually commonly present and tend to be more pronounced in chronic extensive abscesses. Anorexia, nausea, and vomiting are frequently observed in the early stages. In chronic abscesses these symptoms are not commonly present. Chills and profuse perspiration are more likely to occur in the early cases.

Some observers have reported a peculiar sallowness or dirty yellowish tinge of the skin as part of the clinical picture seen in these cases. This is more likely to be encountered in chronic abscesses of long duration and extensive involvement. Actual jaundice occurs relatively infrequently and when deep is indicative of extensive hepatic destruction. The incidence of jaundice varies from 3 to 33 per cent.

As previously stated, one should remember that amebic hepatic involvement occurs in a relatively large number of patients who have never had a previous diarrhea. This is a particularly significant fact in the diagnostic consideration of amebic abscess of the liver. Jayasuriya reported the incidence of preceding diarrhea as being 45 per cent in his series of cases; Manson-Bahr reported 60 per cent, and Ochsner and DeBakey 67.2 per cent. In the latter group only 25, 4 per cent, had diarrhea on admission to the hospital.

One can expect that in one-third to one-half of cases no history of diarrhea will be obtained. The probable explanation for the relative high incidence of amebic hepatitis in the absence of antecedent diarrhea is based upon the frequency of localization of amebic infection to the right half of the colon and the respective difference in the function of the right and left halves of the colon. Relative slight infection of the sigmoid and rectum produces irritation and excessive secretions of fluids with consequent dysenteric manifestations, whereas similar lesions limited to the cecum and ascending colon do not cause diarrhea because fluid is absorbed in its passage through the uninvolved and normally functioning left colon.

The earliest and most common local manifestations of amebic hepatitis are pain and tenderness in the region of the liver. Various observers have reported the incidence to be 75 per cent to 100 per cent. This pain varies in nature from dull aching discomfort to a severe sharp pain. It is usually located directly over the liver, although it may be most pronounced immediately below the right anterior costal margin, in the epigastrium, about the ninth interspace in the axilla or posteriorly over the twelfth rib. The pain may radiate to the right or left shoulder. This is seen in from 3 per cent to 16 per cent of the cases. The probable explanation is on the basis of diaphragmatic irritation. Ludlow has reported a sign which he considers to be of diagnostic value. This consists of a deep seated pain produced by a sudden thrust of the end of the finger over the liver. This point is usually two inches below the right costal margin. Subxyphoid tenderness in a case of amebic hepatitis has been described as Castellani's sign.

The next most common local manifestation of amebic hepatitis and hepatic abscess is enlargement of the liver. Most observers agree that a varying degree of hepatomegaly is almost invariably present. The incidence of this finding varies from 64 per cent to 100 per cent. Ochsner and DeBakey state that the liver was clinically enlarged in 72.9 per cent of their cases. The liver may be palpable below the right costal margin; there may be widening of the lower right intercostal spaces with some restriction of respiratory movement. On percussion liver dulness may extend higher than normal, especially in the mid or posterior axillary line. Frequently, tenderness and rigidity of the abdominal musculature in the right upper quadrant can be demonstrated. At times there is observed in this area a definite localized bulging with reddening and edema of the skin. Associated diaphragmatic pleurisy and basal lung changes on the right side are common. These latter changes are due both to compression of the lower portion of the right lung and also contiguous inflammation. The diagnostic findings of thoracic amebiasis will be discussed later under pleuropulmonary complications.

There are certain laboratory procedures which are of inestimable value as aides to diagnosis of amebiasis. The most practical and most reliable of these are blood studies, stool examinations, and roentgenography. Most observers report a moderate leukocytosis in contrast with the prominent leukocytosis seen with pyogenic liver abscess. In amebic hepatitis and hepatic abscess there is no great increased number of polymorphonuclear leukocytes. Manson-Bahr found an average of 15,000 white counts varying between 8,000 and 16,000. Jayasuriya, in a study of 73 cases, reported leukocyte counts ranging from 10,000 to 30,000 with an average polymorphonuclear percentage of 69 per cent. The lowest counts seem to be associated with the larger and more chronc abscesses. In the Ochsner and DeBakey series the average count in the acute cases was 16,460. This was reduced to 13,000 in the chronic cases. An extremely high leukocytosis is indicative of secondary infection or acute or pyogenic hepatic abscess.

An associated secondary anemia is present in most cases. This is more pronounced in the chronic forms. Ochsner and DeBakey reported an average hemoglobin percentage of 72 in the acute cases and 60 per cent in the chronic cases. The average erythrocyte count was 3,872,000 in the former and 3,490,000 in the latter.

In 1927 Craig demonstrated the presence of specific complement-fixing properties of *Endamoeba histolytica* in the blood sera of persons harboring this parasite. He thus established the base of the complement fixation test. Although Craig believes that this test is of practical value in the diagnosis of amebiasis, he nevertheless states that it is quite inferior to microscopic examination for *Endamoeba histolytica* in the stools, tissues, and exudates. It should never be used as a substitute for these other tests. It should only be used in those cases in which stool and cultural examinations have been repeatedly negative. Craig does not advocate the use of complement fixation test. Although Craig believes that this test is of practical value in the diagnosis of amebiasis, he nevertheless states that it is quite inferior to microscopic examination for *Endamoeba histolytica* in the stools, tissues, and exudates. It should never be used as a substitute for these other tests. It should only be used in those cases in which stool and cultural examinations have been repeatedly negative. Craig does not advocate the use of complement fixation as a routine diagnostic procedure. A trained serologist is needed, and it is quite difficult to obtain an efficient antigen. False positive reactions are very rarely obtained.

Examination of the stools for the presence of amebae is a very important laboratory procedure. However, their incidence of positivity varies with different investigators. This subject has been more thoroughly discussed previously in this paper. The incidence of positive findings will be influenced a great deal by the experience of the examiner, the technic employed, and the repetition of examination in each case. The necessity for doing repeated stool examinations cannot be over emphasized.

X-ray is definitely one of the most reliable diagnostic procedures employed in cases of amebic abscesses. It is also important to perform fluoroscopic examinations of the patient in the upright position. In uncomplicated abscess of the liver, a distinct bulging of the diaphragm is seen pointing upward into the lower lung field in both the anterior-posterior and lateral roentgenograms. It is possible to distinguish subphrenic abscess complicating a liver abscess from that due to other causes. In the former there is characteristically obliteration of the cardiophrenic angle in the anterior-posterior roentgenogram, and obliteration of the anterior costophrenic angle in the lateral view. In subphrenic abscess due to other causes, obliteration of the costophrenic angle is present in the anterior-posterior plate and the posterior costophrenic angle in the lateral view. Miles has shown that whenever abscesses occur in the left lobe of the liver, this condition produces characteristic pressure deformities of the barium filled stomach. The cardia and duodenal cap are displaced and the lesser curvature assumes a typical crescentic shape. A positive diagnosis by x-ray picture is usually made in 80 per cent to 100 per cent of the cases of amebic hepatic abscess.

Various aids to x-ray diagnosis have been advocated by numerous observers. Some have suggested aspiration of pus from the abscess cavity and the introduction of an iodized oil followed by x-ray studies. In this way, the size, shape, and position of the abscess may be visualized better and its drainage and progress controlled more satisfactorily. Still others have injected air with a small amount of lipiodol followed by roentgenograms with the patient in various positions.

The diagnosis of amebic hepatitis and hepatic abscess is not difficult if these conditions are kept in mind and the clinical manifestations and laboratory examinations are given due consideration. Whereas the above findings justify a diagnosis of amebic hepatic abscess, definite proof depends upon the demonstration of the typical chocolate sauce pus. This is accomplished by exploratory aspiration. The hazards of hemorrhage and extension of infection following aspiration may be largely avoided by pre-aspiration emetine therapy and proper technic of aspiration. The site of puncture and direction of the introduction of the needle will depend upon the clinical and radiologic findings.

PLEUROPULMONARY AMEBIASIS

Thoracic complications of amebiasis usually result from extension of the process in the liver through the diaphragm into the thorax. The incidence of pleuropulmonary amebic infection varies from 3 to 58.8 per cent. This type of involvement occurs most frequently during the third and fourth decades of life. About 80 per cent of the cases are male patients.

In most instances the involvement of the lungs and pleura is a result of direct extension from an amebic hepatic abscess due to perforation occurring through the diaphragm into the lung, bronchi, or pleura. Rarely is the involvement of the lungs due to hematogenous and lymphatic spread. Rarely, if ever, does the primary infection of the lung occur. Netter and Petgetakis, however, have described a few cases of amebic bronchitis which they considered to be of definite primary infectious origin.

The majority of amebic abscesses of the liver occur on the convex surface and in the posterior portion of the right lobe. As the abscess enlarges it tends to incorporate the diaphragm within the wall of the abscess. There is usually an accompanying pleurisy with adhesions which obliterates the pleural cavity. Therefore, rupture occurs more commonly into the base of the right lung. If the hepatic abscess has developed very rapidly it will tend to rupture into the pleural space.

There are a number of types of pleuropulmonary ameba infection. The usual classification consists of:

1. Hematogenous pulmonary abscess without liver involvement.
2. Hematogenous pulmonary abscess and independent liver abscess.
3. Pulmonary abscess extending from the liver abscess.
4. Bronchohepatic fistula with little pulmonary involvement.
5. Empyema extending from a liver abscess.

The contents of a lung abscess due to amebic infection vary according to its type. In the hematogenous abscess the contents are purulent and are in no manner characteristic. However, in those cases in which there is communication between the liver abscess and the pulmonary or pleural lesion, the contents are usually of the chocolate sauce type. Clinical manifestations of amebic infection of the lungs and pleura vary according to the mode of infection. In cases in which infection extends from a liver abscess, the first sign is usually a severe pain in the lower portion of the chest on the right side. This is probably due to inflammation of the diaphragmatic pleura. The pain is frequently referred to the right shoulder. An unproductive cough is a common symptom in the beginning. Purulent and chocolate sauce expectoration occurs in cases with communication between the abscess and a bronchus. Dyspnea and fever may occur. In Ochsner's and DeBakey's series of cases the chief complaints were as follows:

Cough and expectoration—40 per cent.

Pain in the chest—40 per cent.

Pain in the right upper quadrant—26.6 per cent.

Fever—6.6 per cent.

Pain in the right shoulder—6.6 per cent.

Just as in amebic hepatitis, a history of diarrhea is obtained in only 30 to 50 per cent of the cases.

The chest findings are those of consolidation and cavitation. In many instances a diagnosis of pulmonary tuberculosis is made. In those few cases in which the liver abscess first perforates into the pleural cavity with the development of an empyema the clinical manifestations are those of pleural effusion. In addition to the thoracic signs and symptoms the abdominal manifestations are important. Characteristically, the temperature elevation is not high—usually averaging from 99° to 101° F. Hyperpyrexia and chills probably indicate secondary infection.

As in amebiasis elsewhere in the body, a moderate leukocytosis is usually encountered in amebic infection of the pleura and lungs. There is usually no concomitant increase in the polymorphonuclear cells. In recent pulmonary amebic infection the amebae are generally present in the sputum and can be demonstrated by microscopic examination. The sputum is usually reported positive for *Endamoeba histolytica* in from 70 to 90 per cent of the cases. The stools may or may not contain the amebae or cysts. This is due to the fact that frequently the colonic process has subsided by the time the pulmonary symptoms develop.

The x-ray picture is quite typical in those cases secondary to rupture of an hepatic abscess. The roentgenographic findings in the case of an amebic liver abscess have been previously described. In those cases in which perforation into the lung has occurred, a shadow, triangular in shape, with the base toward the liver can usually be seen in the roentgenogram. This is especially true in the lateral plates but is also seen in the anterior-posterior view. In cases with hematogenous lung abscess the shadow may be located in any part of the lung, and usually there is a clear zone between the abscess shadow and that produced by the liver. Flynn and Warren believe the following to be cardinal signs of bronchohepatic fistulae:

1. High fixed right diaphragm.
2. Abscess mass near the diaphragm and involving the lung.
3. Column of fluid extending from this to the trachea.
4. Expectoration of bile—stained sputum.

Fistulous communications between the hepatic abscess and the bronchi may be demonstrated by lipiodol filling of the tracheobronchial tree.

Amebic infections of the lungs are likely to be confused with tuberculosis. Sputum examinations are therefore most important. Some cases, because of the acute onset, are confused with pleurisy and pneumonia. It is exceptional, however, that the high leukocyte count seen in pyogenic pneumonias occurs in cases of amebic pneumonitis. Then, too, the temperature reaction in amebic infections is considerably lower than that in the usual pyogenic infections.

The diagnosis of the usual type case of pleuropulmonary amebiasis should not be very difficult providing one is mindful of the above clinical and laboratory findings.

Certain investigators have reported a definite relationship between amebic infection and Loeffler's syndrome. This particular syndrome is considered allergic in origin, being caused by variable allergens. The syndrome is characterized by attacks of asthma accompanied by a cough, eosinophilia (10-60 per cent), a low grade fever with mild leukocytosis, and a slightly increased sedimentation rate. On physical examination there are few pulmonary signs —perhaps a few rales. X-ray shows considerable consolidations which appear suddenly in various parts of the lung and disappear rapidly only to reappear in another position of the lung. The shadows are most frequently in the lower lung fields near the diaphragm. These signs disappear in approximately a week and usually leave only very fine fibrous scars. Many cases have been reported which were specifically due to *Endamoeba histolytica.* Hoff and Hicks reported two cases in 1942. Both were typical of Loeffler's syndrome and apparently a result of amebic infection. There was dramatic improvement following therapy with emetine hydrochloride.

AMEBIASIS OF THE GENITO-URINARY SYSTEM

The urinary complications of amebic intestinal infection are cystitis, pyelitis, nephritis, urethritis, and kidney abscesses. In 1913, Kulz reported two cases of multiple kidney abscesses due to *Endamoeba histolytica.* Hartman-Keppl in 1923 reported a case of amebic kidney abscess following an operation for an amebic hepatic abscess. In 1924 Vidnew reported a case of miliary abscesses in the cortex of the kidney. The most illustrative case of amebic abscess of the kidney was reported by Casco in 1932. This concerned a four year old boy who had suffered from relapses and exacerbations of a bloody diarrhea for months, and whose feces were positive for *Endamoeba histolytica.* He developed a painful and tender enlargement of the left kidney and suffered from hematuria. Later, the patient passed large amounts of anchovy sauce pus by the urethra. The kidney decreased in size and trophozoites and cysts of *Endamoeba* were found in the pus. The case was treated successfully with emetine.

Segurola, in 1932, reported a case of amebic infection of the urinary bladder and of the kidney pelvis without evident intestinal infection and history of amebiasis, and with no symptoms referable to the gastrointestinal tract. Goyena, in 1926, reported cases of intestinal and urinary amebiasis, characterized by lumbar pain, albuminuria, pyuria, and hematuria.

Bernardi and Esquivel, in 1939, made an analysis of the literature on urinary amebiasis consisting of 50 cases in addition to four of his own. From this report it is evident that amebiasis of the urinary tract may present numerous symptoms; but pain in the lumbar region, on urination, pyuria, and hematuria are the most important symptoms. They believe that urinary amebiasis is always secondary to infection by the parasite elsewhere and that it is spread either through the blood or lymphatics. They reviewed a case report by Ingrum (1914) which concerned a man who had chronic gonorrhea and amebic dysentery and who used the same syringe for enemas as well as for urethral irrigations. This particular case illustrates another possible mode of infection, since this patient developed an amebic cystitis.

In 1943, Kirsh and Diaz-Rivera reported a type of case which before this time had never been noted as being an extra-intestinal site of amebic infection. This case was one of a perinephritic abscess. Although it is obviously one of the rarest of all complications it might be interesting to note the case history of this particular patient.[11]

In March, 1942, a 47 year old white female was admitted to the Philadelphia General Hospital complaining of pain in the right back and upper abdomen. Since 1933 she had suffered from intermittent bloody diarrhea and severe crampy abdominal pains. In 1941 she had a bout of fever for several weeks associated with rather severe pains in the right upper quadrant. On admission in 1943 she was extremely weak. Her stools were negative for amebae.

A laparotomy was performed; and this revealed a large perinephritic abscess, filled with thick yellow pus. Blocked paraffin sections of the pus revealed *Endamoeba histolytica* in the vegetative forms. The parasite was not found on fresh mounts. The treatment consisted of emetine irrigation followed by a course of vioform. The patient was discharged 131 days after admission from the hospital. There was prolonged drainage from the abscess.

It is evident that this patient suffered from a dysenteric form of amebiasis since 1933, as suggested by the history of intermittent bloody diarrhea. The patient also probably had an amebic hepatitis due to the right upper quadrant pain. Exquisite tenderness of the right costo-vertebral angle indicated kidney involvement. The pus was not at all typical.

These are apparently four possibilities as to how the infection got to the perinephritic space:

1. The patient may have had an hepatic abscess which ruptured into the perinephric space. (This is unlikely, for the majority of hepatic abscesses due to *Endamoeba histolytica* rupture through the diaphragm into the pleural cavity.)
2. Hematogenous spread is doubtful since the parasite had to be filtered through the liver and lungs, and an abscess of the liver would have developed.
3. The parasite may have been carried by the blood stream from amebic infection of the lungs or bronchi. (This is hardly possible, since there was no evidence of lung and bronchial involvement.)
4. Lymphatic passage to the perinephric space is the most likely method of spread.

Amebiasis of the genitalia probably occurs more frequently than has been reported. A case of an amebic penile ulceration confused with a primary luetic chancre has been described in the literature. Amebic infection of the testicles and epididymis occurs very rarely. Several cases of uterine and vaginal amebic infection have occurred. These are usually associated with a rather profuse bloody vaginal discharge. Diagnosis is nearly always apparent from microscopic examination of the discharge. Involvement of the tubes and ovaries is less common.

AMEBIASIS CUTIS

One of the less common but most serious lesions due to amebae is ulceration and gangrene of the skin and subcutaneous tissues. This complication was first reported in 1919 by Engman and Heidhous. Twenty-seven authentic cases have been reported since that time, although it is highly probable that many more undiagnosed cases have existed. It is thought that the majority of cases fall under the following classifications.[2]

1. Cases following drainage of an amebic abscess of the liver.
2. Those following drainage of a ruptured viscus (appendix, fecal fistula, pericolic abscess, colostomy following resection of the large bowel.)
3. Those cases with involvement of perianal skin associated with amebic colitis.
4. Those cases without any direct connection with viscera.

Of the authentic cases in the literature 15 recovered, 11 died, and two were not followed. Most of the cases followed drainage of an amebic hepatic abscess. The mortality was also greatest in this group. In seven of the 11 dead there was extensive gangrene of the abdominal wall following drainage of a liver abscess. The remaining four deaths were caused by gangrene of the abdominal wall following a colostomy for obstruction, drainage of a pericolic abscess, a fecal fistula, and extensive involvement of the perianal skin associated with a severe amebic colitis.

Of the 15 cases which recovered, six had involvement of the perianal skin and subcutaneous tissues. Five cases followed drainage of a liver abscess, one followed a colostomy for ulcerative colitis, two followed drainage of a ruptured appendix, and one followed drainage of a perforated diverticulum of the large bowel.

Engman and Melaney have well described

the appearance of amebic skin lesions as follows:[5]

"(1) A rapidly spreading ulcerative process, the activity of which varies in different portions of the margin.

"(2) A border that presents as a whole an irregular outline as a result of the varying rapidity of its progress.

"(3) An overhanging edge of dying epidermis from under which pus may be expressed.

"(4) An advancing halo beyond the margin of the ulcer which varies in color from a dusky red through various shades until it merges gradually with the color of the normal skin.

"(5) Pain and extreme tenderness on pressure.

"(6) The floor of the ulcer composed of indolent granulation tissue covered irregularly with debris and pus."

Secondary infection with bacteria is common and plays an important role in the progress of the disease. Secondary infection gives a bad prognosis. *B. coli* and anaerobic streptococci are the most common secondary invaders.

The history is most important as a means of diagnosing such a condition. However, one should never neglect careful and repeated examinations of the pus from the sinuses and portions of necrotic material for *Endamoeba histolytica.* Early recognition, early administration of emetine, and extensive debridement are essential if one hopes to establish a good prognosis.

AMEBIC BRAIN ABSCESS

This is one of the very rare complications of amebic intestinal infection. The incidence, however, is variously reported. In 1887 Kartulis stated that brain abscess occurred in 3 per cent of his cases of amebic dysentery. Armitage in 1919 collected the cases recorded in the literature up to 1919. These were 49 in number. Lewis, in 1934, reported another case which with two reported by Runyan and Herrick (1925) makes 52 recorded cases. It is interesting to note that invasion of the brain has never been observed in patients who did not give a history of previous dysenteric attacks or who were not suffering from such symptoms at the time of the occurrence of the brain abscess.

The amebae undoubtedly reach the brain through the blood stream. When the central nervous system is actually invaded by the organisms, the symptoms and signs are those of a diffuse meningo-encephalitis with focal signs depending upon whether or not actual abscess formation occurs. Headache is the outstanding symptom. This is usually associated with progressive impairment of consciousness and mental symptoms such as memory defects, personality changes, etc. Convulsions, aphasia, hemiplegia, and diplopia may occur.

Ochsner and DeBakey state that 94 per cent of brain abscesses due to amebae occur in males, predominantly between the second and fourth decades.

Armitage describes a typical case as follows:[17]

" . . . the patient is usually a man in the prime of life who has had dysentery, either acute or chronic. He develops a suppurative hepatitis; one or more liver abscesses may have been operated on and drained satisfactorily. The condition appears to have been improving for a time, but one day the patient is not so well. He complains of severe headache which nothing will relieve, or the onset may be more sudden, almost dramatic; and the patient may without warning develop one or several epileptic attacks. Strabismus, diplopia, aphasia, paresis, or hemiplegia may occur but the symptomatology is not consistent. Coma supervenes followed by death. The whole duration from the appearance of the first symptom to death lasts ten to fifteen days at the most."

Whereas amebic liver involvement is seen in 33 to 51 per cent of cases with amebiasis coming to autopsy and lung abscess seen in 15 to 20 per cent of these cases, only about 3 per cent of liver abscess cases show amebic infection of the brain. To date only 60 cases of amebic abscess of the brain have been reported. In 15 per cent of these *Endamoeba histolytica* was isolated from the lesion. As stated previously, in almost every case with a brain abscess there is also a liver and/or lung abscess. Cases are seldom reported otherwise. In the absence of both liver and lung involvement the metastasis of the organisms from the bowel to the brain is thought to be by way of the vertebral veins.

Pathologically, there is a non-specific necrosis of brain tissue with the formation of purulent exudate. In the acute stage there is no surrounding inflammatory reaction. Later, hematogenous cell infiltration occurs with a predominance of polymorphonuclear cells. In the chronic stage encystment of the cavity may occur or only a small cavity may remain containing cellular debris in which dead organisms may be found. The abscess may be found in the periphery as large vacuolated cells containing ingested red blood cells.

In amebic infection of the brain the spinal fluid findings vary a great deal and may show no characteristic changes. With meningeal involvement, however, there is usually a marked pleocytosis. All of the recorded cases of brain abscess due to amebiasis have had a fatal termination. Surgery, emetine, and sulfonamides have all proved of useless value.

MISCELLANEOUS

Amebic abscess of the spleen has been reported by Kartulis (1887), Maxwell (1909), Rogers (1913) and others. However, this complication is so rare as to merit little consideration.

Amebic pericarditis, osteomyelitis, and myositis have been described, but these are so very rare as to be medical curiosities.

Amebic infection of the gall bladder and biliary system has been seen as a sequella of amebic hepatic involvement. These cases too are very rare.

SUMMARY

In this paper I have attempted to give a rather detailed description of the more common extra-intestinal lesions due to *Endamoeba histolytica.* Emphasis has been placed upon the clinical manifestations and the various diagnosic aides. A discussion of treatment and prognosis has been omitted.

The greatest part of the paper has dealt with hepatic amebiasis. It is by far the most frequently encountered type of extra-intestinal amebic infection. Pleuropulmonary complications have been allotted a good deal of space because of their rather frequent occurrence. Genito-urinary amebiasis, amebiasis cutis, and amebic abscess of the brain have also been considered. Splenic amebiasis, amebic pericarditis, involvement of the gallbladder and biliary system, osteomyelitis, and myositis have been briefly mentioned.

Except for the extremely rare types, extra-intestinal amebiasis is not difficult to diagnose. This is particularly true of an amebic hepatic abscess. A moderate leukocytosis, a low grade type of fever, and a history of amebic dysentery are fairly common findings in all these cases.

There is a definite need for the physician to become more conscious of the possibility of extra-intestinal amebic lesions in his differential diagnosis. It is true that many of these are indeed medical curiosities. Still other types, however, have proved to be major surgical and medical problems. Early diagnosis can, therefore, not be overemphasized. A most important point to stress is that amebiasis is not strictly a tropical and subtropical disease as it is considered to be by so many physicians.

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OFFICIAL NOTICE

The dates of the 1946 meeting of the State Society have been changed to May 6, 7 and 8. However, the meeting is still scheduled to be held in Alexandria.

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COMPULSORY HEALTH INSURANCE

There have been two rather interesting developments in the program of compulsory health insurance as outlined by President Truman in his last message to the Congress, one of which has to do with the reaction of the members of Congress to this proposal. A very recent newspaper article indicated that the vote in the Congress was in the ratio of seven to four against compulsory health insurance, approximately one-third of the members of Congress having been contacted in this poll. However, the observer would note in reading this particular despatch from Washington, that the majority of the members of Congress who spoke against compulsory health were members of the Republican party and naturally they could be expected to be antagonistic to any proposal of the Democratic president. It is earnestly to be hoped that physicians in this country will not be deceived by this report and relax their efforts to combat state medicine. After all the Republicans are much in the minority and the figures given probably do not represent the actual voting strength of those who have to make the decision when compulsory health insurance, probably in the form of the Wagner-Murray-Dingell bill, is presented to Congress. We still should continue whole heartedly and with all our effort to let our Congressmen know how we as doctors feel about compulsory health insurance and fight this measure to the limit of our ability.

A second poll, called the poll of experts, has been published in the *American Magazine.* These experts voted sixty to forty in favor of compulsory health insurance. Here again a distorted picture is presented by the poll because of the so-called experts a large number consist of men who have been active proponents of compulsory health insurance. Truly it might be said that sixty to forty voting represented a very favorable opinion against the ideas of having a compulsory health system with all the demerits that the plan calls for, because as was said before these experts represent to a very large extent a group who would be expected to vote in favor of compulsory health insurance. It should be noted that the members of Congress or those who are classified as "experts" are almost entirely in favor of medical care to people at a price that they can afford to pay but most physicians agree that voluntary methods can take care of medical service to the lower income group and they will not have the inefficient and extravagant bureaucratic administration that can be counted upon if health insurance is made obligatory and compulsory by an Act of Congress for all wage earners.

OFFICE SPACE

The doctors in New Orleans who are returning from the armed services are having a tremendous difficulty in obtaining office accommodations, so much so that it has become a very real and discouraging problem. The Orleans Parish Medical Society, under a committee headed by Dr. E. L. Zander, is doing everything in its power to ease the situation and to help the returning medical veteran obtain office space. Unfortunately this particular problem is not one peculiar to New Orleans. In many of our neighboring cities in the South we hear of exactly the same situation as well as those in other sections of the country were physicians practically always have their offices in special buildings.

In view of the inadequacy of accommodations for physicians who desire to be in so-called office buildings, we have often wondered why they do not have their offices in their homes. Certainly in the South at least and the far West and to a lesser extent in the mid-West it is very much the custom not to have domiciliary offices, but certainly in the large Eastern cities the great bulk of the doctors have their offices in their residences. In Baltimore, in Philadelphia, in New York, in Boston and in the smaller Eastern cities there are no office buildings or very small ones designed for physicians; and physicians are not welcomed in the office buildings which are for general business purposes. As a matter of fact doctors are excluded in all high class office buildings in these cities. Medical Arts Buildings have been constructed in a very small way to take care of a few specialists but nowhere do you see Medical Arts Buildings comparable to those that may be seen for example in Dallas or in San Antonio where they are the outstanding office buildings of the city.

To the returning veterans, most of whom are young men, an office in the home would be a good start for the building up of a neighborhood practice. Offices in the home certainly have very definite advantages, certainly for a man who is practicing general medicine or is not in a highly specialized branch of the profession. There seems to be a feeling that if the office is in the home a man has not been successful but of course this is ridiculous. He can do just as good work in a home office as an office building office and he can also build up a practice among the people in his immediate locality. There is no reason why a man should not be afforded the same respect and have the same appreciation of his abilities if the office is at home than if it is in a crowded building with inadequate space.

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PENICILLIN IN THE TREATMENT OF AGRANULOCYTOSIS

It is hoped we will be pardoned for harping upon and writing frequently about penicillin but the remarkable effects of this so-called wonder drug in various diseases are continually being reported; it is wise to attempt to keep up with what can be done therapeutically with penicillin. The particular reports that we wish to call attention to have to do with penicillin in conditions associated with a marked reduction in the total number of leukocytes. Those conditions are characterized almost regularly with ulcero-necrotic lesions of the mucous membranes, notably of the mouth. When these develop the prognosis is very grave and many of the patients die who suffer from angina and neutropenia. As a matter of fact in the early reports of agranulocytic agina the mortality rate was given as being approximately 100 per cent.

With the introduction of some of the newer therapeutic compounds, notably the sulfa drugs and thiouracil, the development of granulocytopenia has been responsible for a certain number of casualties. It is most encouraging to read reports now of agranulocytosis being cured by penicillin. Thiouracil is an extremely effective drug in the treatment of hyperthyroidism and yet because of the inherent dangers of producing granulocytopenia at times followed by death the drug will probably not be offered to the medical profession. If penicillin can control the ill effects of thiouracil then it is quite possible that the neutropenia will disappear and the drug may be continued. Of course it must be understood that sepsis is the factor which kills the patient rather than the marked reduction in the number of circulating polymorphonuclear cells. There have been two recent articles in the United States Naval Medical Bulletin[1, 2] recounting favorable results and in a recent number of the Annals of Internal Medicine two additional papers[3, 4] appeared. One of these[3] is most interesting because it deals with a patient who had aleukemic leukemia which ultimately terminated in a frank leukemia. In acute leukemia the development of ulcerative mouth lesions was almost invariably considered to be a death warrant. In this particular case of leukemia five different attacks of angina occurred, all of which were controlled by the administration of penicillin. This drug is being used incidentally in the treatment of other mouth conditions, such as Vincent's angina and streptococcic sore throat and it is being administered at times in the form of trochees which apply the drug locally to the lesions, as well as being given by the usual hypodermic routes.

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ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

1946 VICTORY MEETING

The 1946 meeting of the State Society, originally scheduled for April 29, 30 and May 1 has been postponed one week and will be held at the Bentley Hotel, in Alexandria, on May 6, 7, and 8. It has been decided that this meeting will be designated as a Victory Meeting, celebrating the return from military service of many of our members who are at this time resuming their activities in civilian practice. This, we think, is an occasion to be celebrated and these men should be honored for the splendid service they have rendered their Country.

The Chairman of the Committee on Arrangements is Dr. O. B. Owens, of Alexandria. Dr. Owens has been very active in the interest of organized medicine in the past and will, we feel certain, put a great deal of time and effort into the work of making plans for the meeting. With his cooperation there is assurance of a most successful meeting. The subcommittees on arrangement have not yet been appointed. As soon as information is received in this regard notice will be carried in the Journal.

It has been planned to have a three day meeting. The House of Delegates will convene on the morning of May 6. The official opening meeting of the Society will be held on the evening of May 6. The meeting on this evening will be open to the public and efforts are being made to secure a speaker who will prove of interest to such a group. A suggestion has been made that a talk be presented on the subject of voluntary prepayment medical insurance. This, all will agree no doubt, is a subject of great concern to the general public as well as to the medical profession.

Work has been started on preparation of the scientific program. The sectional chairmen, appointed by the president are as follows:

Bacteriology and Pathology—Dr. A. V. Friedrichs.

Ear, Nose and Throat—Dr. George Taquino.

Eye—Dr. W. B. Clark.

Gastro-enterology—Dr. D. C. Browne.

General Surgery—Dr. Sidney Charbonnet, Jr.

Gynecology—Dr. J. W. Reddoch.

Medicine and Therapeutics—Dr. Edgar Hull.

Nervous Diseases—Dr. Walter Otis.

Obstetrics—Dr. Eugene Countiss.

Orthopedic Surgery—Dr. George Battalora.

Pediatrics—Dr. George Wolfe.

Public Health and Sanitation—Dr. Waldo L. Treuting.

Radiology—Dr. J. N. Ane.

Urology—Dr. R. F. Sharp.

These appointments were based, in most instances, on the fact that the appointees represent the various specialty societies in Louisiana. You will recall that recommendation has been made to the House of Delegates that this procedure be followed if thought feasible.

The special committee appointed to consider rearrangement of the scientific program has decided to follow the procedure outlined for the program in 1944. There will be a total of sixteen papers, four each session (Tuesday morning and afternoon, and Wednesday morning and afternoon). There will be only one session taking place at a specific time and in this way the doctors will be able to participate in the entire program if they so desire. It has been suggested that presentation of papers be followed by questions and answers and it is felt that this will result in very profitable discussion for all present.

In regard to the social features of the meeting it may be stated that luncheons will be held for the members during the meeting and a dinner-dance for members and guests will take place on Tuesday evening, May 7.

From time to time the membership will be informed concerning further plans; however we are certain that from the data submitted here each member will be most anxious to attend and will make plans to do so without delay. Hotel reservations may be secured through the office of the State Society, 1430 Tulane Avenue, New Orleans, or by communicating with the Arrangement Committee in Alexandria, or with the Bentley Hotel direct.

Following is a copy of a special bulletin received from the Council on Medical Service and Public Relations of the American Medical Association:

With the signing of H. R. 4717 by the President, now Public Law 293, there was created in the Veterans Administration a Department of Medicine and Surgery under a Chief Medical Director. General Bradley announces that he had designated General Paul R. Hawley to serve as Acting Chief Medical Director. This act will bring professional personnel into an organization comparable with the Army and Navy Medical Corps and the U. S. Public Health Service.

General Bradley immediately authorized the employment of physicians, nurses and dentists to fill existing vacancies. There is an immediate need for 1,125 doctors, 1,200 nurses and 100 dentists.

Among the major provisions are:

1. Specialists certified by VA will be paid 25 per cent more salary up to a ceiling limit of $11,000 a year.

2. Residencies will be set up in VA hospitals where younger doctors may study to qualify as specialists. This will mean that veterans will be able to obtain the most up-to-date medical treatment—the same kind as if they were admitted to hospitals connected with the nation's leading medical schools and centers.

3. Promotions will be made on recommendations of special VA boards which, in general, compare with the "selection boards" operating in the Army and Navy for higher ranking officers.

4. Office of Chief Medical Director. The director will be paid a salary of $12,000 a year. A Deputy Medical Director will receive $11,500 and Assistant Medical Directors—not to exceed eight in number—will be paid $11,000 each.

5. Medical Service.

Chief grade, $8,750 minimum to $9,800 maximum.

Senior grade, $7,175 minimum to $8,225 maximum.

Intermediate grade, $6,230 minimum to $7,070 maximum.

Full grade, $5,180 minimum to $6,020 maximum.

Associate grade, $4,300 minimum to $5,180 maximum.

Junior grade, $3,640 minimum to $4,300 maximum.

6. Appointments of key executives will be for a four-year term, subject to removal by the Administrator for cause. Reappointment will be for the same term.

7. Doctors, dentists, nurses and technicians now employed by the VA will be continued on their present jobs pending determination of their qualifications for appointment in the new medical department.

8. Another provision of the act which will permit professional improvement of VA medical personnel will allow up to five per cent of such employees to study or do research work for periods of time up to 90 days. This will enable doctors, dentists, nurses and technicians to attend recogniged schools or work with the U. S. Public Health Service or other research groups. Officials pointed out that this would enable workers to keep abreast with the very latest developments in their respective fields.

9. Although they are not subject to selection or promotion by Civil Service, the members of the new VA Department of Medicine and Surgery will be under the Civil Service Retirement Act of 1920 and will receive its benefits.

General Hawley commenting on the President's action said:

"With the signature of the medical department act, our objective is clear—a medical service for the veteran that is second to none in the world. Around the splendid nucleus of excellent men and women in the VA medical service, we shall build such an outstanding service."

SPECIAL NOTICE

To the Physicians of Louisiana:

During the war period the American people gave through the American Red Cross large quantities of blood from which dried plasma was prepared for the Armed Forces. Because of an earlier cessation of hostilities than was reasonably to be expected, there is now on hand a large quantity of dried plasma which is in excess of the needs of the Army and Navy during the expected useful life of the plasma. According to Army and Navy estimates the available surplus amounts to approximately one and a quarter million packages at the present time. This surplus has been given to the American Red Cross to return to the American people who made this supply of plasma possible. The American Red Cross has formulated a plan for distribution of this plasma throughout the country through the state health departments. The plasma is to be made available to all physicians licensed to practice medicine and surgery and to all acceptable hospitals for administering to any patient without charge to the physician, hospital or patient either for the product or for the cost of shipment. The plasma has been allotted to the states on an estimate of need calculated by the Red Cross on the basis of the number of licensed physicians and the number of general, pediatric, and maternity hospital beds and any other beds devoted to the care of acute illness.

The initial supply to Louisiana, which is estimated to be the need for a three months' period, will consist of 5,441 packages of plasma. The plasma will be distributed to each parish for the use of local physicians, the amount based on the estimated need of the locality for a three months' period. The parish units will be the local distributors and will arrange to make the plasma available to physicians at any hour of the night or day. The City of New Orleans Health Department will receive a supply for the use of the New Orleans physicians. They too will arrange for twenty-four hour service. Arrangements are being made for centers in each of those parishes which do not have health unit offices for a like distribution of the material. In addition a supply will be furnished each of the state charity hospitals.

Most of the available plasma is in packages of 500 c.c., although some are in packages of 300 c.c. Each package contains "Report of Use" Forms to be sent to the Army or the Navy. *These are to be disregarded.* The Army and Navy do not wish to receive this report on plasma used in civilian medical practice.

The allotment of plasma for Louisiana should be received early in February and will be made available to the physicians of the state as soon as possible thereafter. This material belongs to the American people and is being returned to them. The Department of Health will give all assistance within its power in the distribution of this material and will endeavor to answer any questions which you may ask concerning it.

Very truly yours,
David E. Brown, M. D.,
State Health Officer.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR OF MEETINGS

February 11. Orleans Parish Medical Society, 8:00 p. m.
February 13. Woman's Auxiliary, Orleans Club, 3:00 p. m.
Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
Touro Infirmary Staff, 8:00 p. m.
February 14. Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.
February 15. I. C. R. R. Hospital Staff, 12:30 p. m.
February 18. Hotel Dieu Staff, 8:00 p. m.
February 19. Charity Hospital Medical Staff, 8:00 p. m.
February 20. The Orleans Society of X-Ray Technicians, 7:30 p. m.
Charity Hospital Surgical Staff, 8:00 p. m.
February 22. L. S. U. Faculty Club, 8:00 p. m.
New Orleans Hospital Dispensary for Women and Children Staff, 8:00 p. m.
Ochsner Clinic Staff, 8:30 p. m.
February 26. Baptist Hospital Staff, 8:00 p. m.
February 27. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
French Hospital Staff, 8:00 p. m.
February 28. Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.
DePaul Sanitarium Staff, 8:00 p. m.
March 1. Medical Advisory Committee, Charity Hospital Visiting Staff, 11:00 a. m.
March 4. Board of Directors, Orleans Parish Medical Society, 8:00 p. m.
March 5. Eye, Ear, Nose and Throat Staff, 8:00 p. m.
March 6. Mercy Hospital Staff, 8:00 p. m.
March 11. Scientific Meeting, Orleans Parish Medical Society, 8:00 p. m.

MAX M. GREEN, M.D.,
Secretary

SIXTY-NINTH ANNUAL INSTALLATION

At the annual installation meeting and banquet, which was held Monday night, January 14, 1946, at the Jung Hotel, the following officers to serve for 1946 were installed:

President: Dr. Daniel J. Murphy.
President-Elect: Dr. H. Ashton Thomas.
First Vice-President: Dr. Edmund M. Connely.
Second Vice-President: Dr. C. J. Brown.
Third Vice-President: Dr. Edgar Hull.
Secretary: Dr. Max M. Green.
Treasurer: Dr. Boni J. DeLaureal.
Librarian: Dr. Eugene H. Countiss.
Additional members of the board of directors: Dr. E. L. Leckert and J. O. Weilbaecher, Jr.

Dr. Philip H. Jones, the outgoing president will, in accordance with the By-Laws, serve as a member of the Board of Directors during 1946.

NEWS ITEMS

During the month of December the American Medical Women's Association held their mid-year board meeting at the Jung Hotel.

Dr. Eugene Countiss was elected president of the New Orleans Gynecological and Obstetrical Society at a recent meeting of that organization. Other officers elected were: Drs. Earl Conway Smith, first vice-president; W. D. Beacham, second vice-president; Rupert Arnell, secretary; H. B. Alsobrook, treasurer. Dr. Jos. Reddoch, retiring president was appointed to the board.

Dr. Jules Myron Davidson has been re-appointed southern district deputy, Grand Council, Phi Delta Epsilon for 1946.

Dr. Lewis E. Jarrett recently addressed the Loyola branch of the American Pharmaceutical Association.

Dr. Howard Mahorner read a paper entitled, "Restoration of Continuity of Resection of the Rectum" before the annual meeting of the Southern Surgical Association at Hot Springs, Virginia, December 4-6.

Dr. Henry D. Ogden attended a meeting of the American Academy of Allergy in Chicago, December 10-11. Dr. Ogden was elected to membership in the Academy.

Drs. Felix Planche and Edwin L. Zander were recently named fellows by the United States Chapter of the International College of Surgeons. Dr. Charles Odom was named an associate by the college.

Dr. N. J. Tessitore was recently appointed a member of the board of administrators of Charity hospital.

Dr. Edwin L. Zander was elected second vice-president of the Federation of Catholic Physicians' Guilds at a recent meeting of that organization in Chicago.

Stars and Bars Chapter of AOA held their annual meeting on January 3. At this meeting senior and junior students were elected.

REMOVALS

Dr. Marshall L. Michel from 211 Medical Arts Bldg. to 1441 Delachaise Street.

Dr. Alberto Prieto from 1514 Delachaise Street to 1441 Delachaise Street.

Dr. B. Bernard Weinstein from 300 Medical Arts Bldg. to 1441 Delachaise Street.

Dr. Elmer E. W. Kramer, recently returned from military service, has accepted a residency at The Lying-In Hospital, New York City.

WELCOME HOME

Physicians Returned From Military Service

The following members of the Society have been released from active military service, and have resumed practice:

E. R. Bowie, 3435 Prytania Street; Joseph Cohen, 811 Maison Blanche Bldg.; George M. Genet, 3305 Louisiana Ave. Pkwy.; Irving J. Glassberg, 2701 Peniston Street; Abe Golden, 1522 Aline Street; George B. Grant, 404 Medical Arts Bldg.; Max M. Hattaway, 1310 Canal Bldg.; A. N. Sam Houston, 912 Union Street; Samuel Karlin, 1514 Delachaise Street; Maurice Lescale, 3514 Canal Street; Bruno F. Mancuso, 2109 Alvar Street; Anees Mogabgab, No. 2 Versailles Blvd.; Louis Ochs, Jr.; Oran V. Prejean, 1430 Tulane Avenue; Prudence E. Prouet, 2121 Magazine Street; Earl Conway Smith, 3306 Louisiana Ave. Pkwy.; J. Kelly Stone, 1147 Canal Bldg.; L. H. Strug, 500 Medical Arts Bldg.; John C. Suares, 1343 Annunciation Street; E. Perry Thomas, 306 Medical Arts Bldg., and Gilbert C. Tomskey, 1010 Richards Bldg.

There is still dire need of office space for physicians returning from military service. If you have any space that is available, please telephone the Secretary's office (MAgnolia 4982) at once.

DECEMBER MEETING

At the December meeting of the Society action was taken on the following matters:

Resolution relative to asking the newspapers to make a special column on the classified page of the paper entitled, "Returned from Military Service", and place in its column the professional cards of persons who have returned from the services, which resolution was held over from the November meeting, was adopted. Copies of the resolution were forwarded to the newspaper. Upon receiving our letter The New Orleans Item immediately followed our suggestion. The Times Picayune-States replied that due to drastic rationing of newsprint they are unable at this time to add new classifications; when they are allotted more newsprint our suggestion will be given serious consideration.

Resolution relative to objecting to the proposed preference or priority system to be employed by Charity Hospital in appointing veterans to residencies at the institution, which resolution was held over from the November meeting, was not adopted. However, a motion was adopted that the Society go on record as recommending to the board of administrators of Charity Hospital that they inform the deans of the two medical schools and the head of the independent units that when making appointments to residencies at Charity Hospital they give Louisiana veterans first choice and other veterans second choice. Dr. Daly informs us that he has passed this information on to the deans of the two medical schools and the head of the independent unit.

A motion was passed that a committee, appointed by the president of the Society, be sent to Washington to interview our Representatives and the President in an effort to have government agencies moved from downtown office buildings to less congested areas.

SPECIAL MEETING

At the special meeting held Thursday, December 27 to consider the best means for removing government agencies from downtown office buildings to government owned property so as to provide office space for returning physicians, the following motion was adopted:

"That the Society enlist the aid of (1) the

Louisiana State Medical Society, (2) other professional groups and civic clubs; and (3) the newspapers; that the Congressmen from this area be interviewed requesting them to do something immediately to alleviate this situation; that a survey of the amount of office space used by doctors prior to 1941 and the amount used today be made; and that the Post War Planning Committee be enlarged and they be given a free hand to settle this matter."

TWENTY-FIVE YEARS OF FAITHFUL SERVICE

The month of November 1945 marked the completion of twenty-five years for Miss Mary Louise Marshall, assistant librarian, in the active direction of the Library's organization and development.

Miss Marshall was honored upon this occasion by the membership at the December meeting. Dr. Eugene Countiss, librarian, presented Miss Marshall with a silver bowl.

Miss Marshall, who is also librarian of the Rudolph Matas library of the Tulane Medical school, a position she has held since 1927, is an honorary member of the History of Medicine; president of the Medical Library Association, since 1941; special consultant on medical classification to the Library of Congress and the Army Medical Library; and honorary consultant to the Army Medical Library.

MEDICAL TOASTMASTERS

In August, 1944 the membership was informed that a public speaking class was organized to give members of the Society, who are really interested, an opportunity to improve their speaking on both medical and non-medical subjects.

The first meeting was held Tuesday, August 29, 1944 at the New Orleans Athletic Club. At that meeting it was decided to outline the activities of the speaking class along the lines of the Toastmasters Clubs, and after the necessary requirements were met to apply to the Toastmasters International for a Charter. On March 6, 1945 the Charter was presented to the Medical Toastmasters.

Each member is called upon to speak for three minutes on subjects assigned, or of his own selection. The instructions which are given follow Dale Carnegie's text book on public speaking, and each member is required to procure a copy.

The Medical Toastmasters meet regularly on Tuesday evenings in the Trophy Room of the New Orleans Athletic Club. A dinner is served at 6:30 p. m., and the meeting begins about 7:30. Attendance at the dinner is not obligatory but is strongly advised.

These weekly meetings afford the doctor a wonderful opportunity to develop his speaking voice, technic and confidence, and the membership is strongly urged to participate. Those of you who are interested should get in touch with the secretary, Dr. Lawrence J. O'Neil.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of very month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

IMPORTANT NOTICE

The dates of the 1946 meeting of the State Society have been changed to May 6, 7, and 8. However, the meeting is still scheduled to be held in Alexandria.

THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

The New Orleans Graduate Medical Assembly, ninth annual meeting, will be held in New Orleans April 1-2-3-4, at the Municipal Auditorium. The program will consist of lectures by sixteen outstanding guest speakers, clinics, symposia, clinicopathologic conference, round-table luncheon discussions and technical exhibits. Registration fee of $10.00 covers all features, including three luncheons. Physicians who plan to attend are invited to register at once with the Secretary, Room 105, 1430 Tulane Avenue, New Orleans 13, Louisiana. Information regarding hotel reservations will be sent upon receipt of registration fee or by request. A list of the guest speakers will be found on the inside front cover of this journal.

THE AMERICAN ACADEMY OF ALLERGY

An orientation Course in Clinical Allergy under the sponsorship of the School of Medicine of Louisiana State University will be held in New Orleans March 8-12, 1946. For detailed information communicate with the local committee in care of Dean's Office, L.S.U. School of Medicine.

D'ANTONI NEW VICE-PRESIDENT OF A. S. T. M.

At the recent meeting of the American Society of Tropical Medicine which was held in Cincinnati, Dr. Joseph S. D'Antoni, associate professor of tropical medicine at Tulane, was elected vice-president of the organization.

MRS. TIPPING LEAVES TOURO INFIRMARY

The innumerable Louisiana doctors who have served an internship at the Touro Infirmary will hear with deep regret that Mrs. Arthur B. Tipping is leaving the institution. Mrs. Tipping began her connection with Touro thirty-seven years ago as a nurse. For many years following the death of Dr. A. B. Tipping, formerly superintendent of Touro Infirmary, Mrs. Tipping has acted as assistant superintendent. She has always had a cheerful sympathetic disposition which has endeared her to the boys who have gone through their internship at Touro and to the doctors who have served on the staff of this institution. Her departure from Touro will leave a void which will be hard to fill.

LULL TO A. M. A.

Major General George F. Lull, who has served during the recent war with distinction and honor as deputy surgeon general, has retired to become assistant secretary and general manager of the American Medical Association. General Lull has had innumerable contacts with medical officers who always found him to be a delightful gentleman in every respect. He should make an excellent manager for the American Medical Association.

KANDLE LEAVES BOARD OF HEALTH

Dr. David Brown, president of the Louisiana State Board of Health, announced that Dr. R. P. Kandle who has been director of the division of local health services has resigned to become field director of the American Public Health Association with headquarters in New York. Dr. Kandle will leave Louisiana with the best wishes of the practitioners of medicine in the state who have come in contact with him. They have appreciated the work he has done under difficult war conditions.

CELLI ELECTED

Dr. Ernest Celli, of the Illinois Central Hospital was elected president of the New Orleans Health Council at a recent meeting of the organization; Dr. Lewis Jarrett, of Touro Infirmary, was made vice-president, and Mr. J. W. Hinsley was reelected secretary-treasurer. At this meeting the possibility of the American Hospital Association holding their convention in New Orleans in 1947 or 1948 was discussed. Attendance at such a meeting is usually between five and six thousand.

TOURO INFIRMARY

At the annual meeting of the Medical Staff of Touro Infirmary held on January 9, 1946 at 8 p. m. the following program was presented: Clinico-pathologic conference by the Department of Pathology with a clinical discussion by Dr. Willard Wirth; Postoperative Cholangiography and Irrigation of Common Bile Duct by Dr. M. L. Michel, Jr.

DE PAUL SANITARIUM

The regular monthly meeting of the Medical Staff of De Paul Sanitarium was called to order at 3:05 p. m. with Drs. Holbrook, Anderson, Unsworth, H. Colomb, Friedrichs, Bolian, Connely, Otis, May and Dubos in attendance.

The scientific section of the program commenced with Dr. Holbrook presenting Case No. 4302 (Mr. T. N.), a white male, aged 18, who has been depressed and nervous for the past ten years because of a dermatologic condition on the soles of both feet; at first seen and treated by Dr. Howles in 1935. The lesions have grown steadily more annoying and Dr. Howles again called in consultation, diagnosed the condition as hyperkeratosis plantaris and palmaris, possibly of fungus origin. The case was discussed by Dr. Burke from a dermatologic standpoint who considered the prognosis poor regarding a cure. In his opinion treatment with x-ray and radium is unsatisfactory, best result being obtained by softening and paring the excess callous and hyperkeratosis. The case was further discussed by Drs. Anderson and H. Colomb.

Next Dr. Otis reported a death, Case No. 4130 (Mrs M. M.), a white female, aged 53 years, whose history and physical examination were one of hypertension with cardiorenal and arteriosclerotic background. The case was discussed by Dr. Dubos from a medical standpoint, followed by the autopsy report by Dr. Friedrichs. The postmortem findings were consistent with the clinical diagnosis on the death certificate with the addition of a very large gallbladder filled with 412 cholesterol stones of various sizes but which apparently caused no symptoms whatsoever. The case was further discussed by Dr. Unsworth, which concluded the scientific program.

The Chairman then called for the reading of the minutes of the previous meeting and after due motioning and seconding they were adopted as read.

Dr. Otis, as Chairman of the Records Committee, next read the reports of the various departments, followed by Dr. Friedrichs, Chairman of the Library Committee, who announced that there was now $1139.00 in the Lewis A. Golden fund and that the purchase of a suitable plaque and book plate was under consideration.

As nominations for officers for the ensuing year were in order, Dr. Connely called upon Dr. Otis, Chairman of the Nominating Committee, to make his report which was as follows:

Dr. Charles S. Holbrook, Chairman
Dr. H. Randolph Unsworth, Vice-Chairman
Dr. Louis J. Dubos, Secretary.

Dr. May moved that the nominations be closed and the above officers were accordingly elected for 1946.

In conclusion Sister Anne thanked the outgoing officers for their cooperation and assistance during the past year and voiced her appreciation of their efforts.

There being no further business the meeting was adjourned at 9:50 p. m. followed by the serving of refreshments.

Louis J. Dubos, M. D.,
Secretary.

CHARITY HOSPITAL

At a meeting of the Medical Division of the Charity Hospital Visiting Staff held on Tuesday, January 15, the following program was presented: Case report by Dr. Fred Eigenbrod; Leukemoid Reaction, discussed by Dr. Edgar Hull.

STATE BOARD OF HEALTH

The Louisiana State Board of Health held its regular quarterly meeting on Friday, January 11, 1946 in the office of the President, 203 Civil Courts Building, New Orleans, La.

After disposing of routine matters the President presented to the Board amendments to Chapter I of the Louisiana State Sanitary Code concerning the control of communicable diseases.

The Board, exercising its authority vested in it by Act 142 of 1936 as amended (known as the Pure Food and Drug Act), passed the necessary regulations to prohibit the use and sale in Louisiana of any cosmetic or beauty preparation containing the potent drug estrogenic hormone, any of its chemical derivatives, or any synthetic chemical product possessing properties similar to estrogenic hormone.

The President told the Board of a survey that he had made regarding the Venereal Disease Program of the Department of Health, after which a full discussion was had on this subject.

NEW PEDIATRIC JOURNAL

Medical articles of pediatric interest are almost beyond count. Even the most energetic and polylingual reader would find it well-nigh impossible to seek out and critically evaluate, without outside aid, every new contribution in this expansive specialty. The prime function of the Quarterly Review of Pediatrics is to make it feasible for the busy physician to keep abreast of the most recent progress in all branches of pediatrics with a minimum of time and effort. The Quarterly Review of Pediatrics serves also as an authoritative guide to original sources when more detailed information is desired.

From a great diversity of national, state and special journals in this country and abroad the editors select for abstracting, as promptly as possible, all articles of significance which deal with the disease conditions, health, growth, and mental welfare, from infancy through adolescence. These abstracts are prepared by trained bibliographers, mostly physicians. The editors check over advance copies of each abstract and add interpretive or critical comments whenever thought necessary.

The Editor-in-Chief is Dr. I. J. Wolman, The Childrens Hospital, Philadelphia 46, Penna.

The sixteen members of the Editorial Board are for the most part Professors of Pediatrics at prominent medical schools.

REPORT OF REFERENCE COMMITTEE ON LEGISLATION AND PUBLIC RELATIONS OF HOUSE OF DELEGATES

"Your reference committee recommends that the House of Delegates express its official disapproval of the fourth proposal of President Truman.

"1. The Wagner-Murray-Dingell bill is founded on the false assumption that solution of the medical care problem for the American people is the panacea for all of the troubles of the needy.

"2. This is the first step in a plan for general socialization not only of the medical profession but of all professions, industry, business and labor.

"3. Positive proof exists from experience in other countries that inferior medical service results from compulsory health insurance.

"4. A program such as outlined is enormously expensive. It will result in greatly increased taxes for the entire population of the United States.

"5. Voluntary prepayment medical plans now in operation in many parts of the United States and which are rapidly increasing in number will accomplish all the objects of this bill with far less expense to the people and under these plans the public will receive the highest type of medical care."

AN EDITORIAL FROM THE "NASHVILLE BANNER"

"There is a splendid timeliness in election of Dr. Harrison H. Shoulders to presidency of the American Medical Association, for American medicine is facing the challenge of socialization, and Dr. Shoulders has been in the forefront of the fight against that hazardous challenge.

"Leaders in the medical profession know the dangers invited by political control of medicine, however glibly its advocates dress it in words of innocence. As speaker of the AMA's house of delegates, and throughout his service in the Tensessee Medical Association, as member, secretary, and editor, Dr. Shoulders has led an uncompromising fight for the freedom of medicine from such political encumbrance, and he will bring to this new assignment the same unswerving defense of freedom's safeguard.

"Dr. Shoulders will take office next year, but the fact doesn't abate the force of his immediate fight, and the American Medical Association's. They have mobilized for it; obviously are recruiting leadership of maximum stature, and command thereby the faith of the American public whose welfare is at stake. It is hardly likely that thinking American citizens will prefer political voices to authoritative, medical voices on a subject involving life and health. It is inconceivable that thinking citizens will permit subjection of MEDICINE to the principles of boondoggling, or assign it to the arrogant, untender mercies of bureaucracy.

"Dr. Shoulders has earned the faith of his vast constituency, not only for professional skill, but for vision incorporating those standards and principles of medical freedom enabling American medicine to forge ahead in a field of science whose boundaries must remain beyond the reach of government dictation. As such a leader, his opinion will bear weight with the people. In this fight, his service again is to his country, no less than when he wore his country's uniform against another, external enemy.

"The American Medical Association is to be congratulated for choice of such a leader; Dr. Shoulders for the opportunity conferred; the country for possession of such leaders for the defense of principle at home."

REPRESENTAIVE MILLER PRAISES WORK OF MEDICAL SERVICES

The following statement, given by the Honorable A. L. Miller of Nebraska in the House of Representatives, is reprinted from the Congressional Record:

"Mr. Speaker, the record of the medical men and the medical service in this war is outstanding. It has never been equalled by any Army in any war. There were over 570,000 wounded in World War II, of whom 360,000 were returned to some type of duty. There were some 25,000 or approximately four per cent who died of wounds.

"In World War II, only six men in each 10,000 died of disease each year. This is a lower death rate in disease than that of civilians in the same age group here in the United States; yet these men lived in every part of the world under adverse physical and sanitary conditions. In World War I, 165 in each 10,000 died each year of disease, and these men were serving only in the United States and in Europe; the death rate in the Union Army in the Civil War was 712 per 10,000.

"The death rate from pneumonia has been reduced from 24 per cent in World War I to six-tenths per cent in this war. The death rate for meningitis has been reduced to four per cent in this war as compared to 34 per cent in World War 1.

"I am sure, Mr. Speaker, that the Congress and the country can look with considerable pride upon this fine record of the medical service. There is no record in civil life or elsewhere to compare with this, and certainly a good job has been done in preventive medicine, as well as in the treatment of disease."

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported for the week ending December 8 in the City of New Orleans there was a total of 157 deaths as contrasted with 124 in the previous week. One hundred and ten of these occurred in the white population, 47 in the non-white, and of these 12 deaths were in children under one year of age. The following week was a particularly unhealthy and fatal week for New Orleanians. There was a big jump in the number of deaths which were well above the three year average. In this week 180 people died in the city, 124 white, 56 colored, with 15 infant deaths divided between the two races. For the week which came to a close December 22 the total number of deaths was reduced by 36, principally due to the fact there were many fewer deaths in the white population and only a very small number of infant deaths. The last week in the year which ended December 29 showed a considerable increase in the number of deaths, with 179 people dying in New Orleans and again most of these were in the white population, 125 of whom succumbed. Twelve of the deaths were in children under one year of age. The death rate was still high in New Orleans in the week which started the new year, there being 186 people dying, 130 of whom were white and 56 colored, with 16 of the total being in small children. The three year average for the corresponding week showed only 154 people usually dying in this particular week.

INFECTIOUS DISEASES IN LOUISIANA

In the weekly morbidity report for the State of Louisiana for the week which ended December 1 there were incorporated the venereal disease statistics for the month of November. In this month there were 1358 cases of gonorrhea, 1192 of syphilis, 21 of chancroid, 18 of granuloma inguinale and 16 of lymphopathia venereum. About half of the gonorrhea cases were reported from military sources but only 76 of the patients with syphilis. The other diseases which are reported weekly and which occur in numbers greater than 10 include 173 cases of unclassified pneumonia, 151 of cancer, 161 of hookworm infestation, 67 of septic sore throat, 36 of rheumatic fever, 27 of pulmonary tuberculosis, 26 of pneumococcic pneumonia, 19 of diphtheria, 16 of chickenpox, 15 of scarlet fever, 14 of influenza, 12 of amebiasis, and 10 of erysipelas. There were also reported four cases of poliomyelitis scattered throughout the state and four of typhus fever. Altogether this week was a remarkable week in the large number and great variety of cases reported to the State Board of Health. It is very interesting that unclassified pneumonia was reported in such a large number, a disease which was not known five years ago.

For the week which closed December 8, influenza led reportable diseases with 50 cases, followed by 39 of scarlet fever, 30 of pulmonary tuberculosis, 20 of diphtheria, 19 of hookworm infestation, 14 of malaria, 12 of septic sore throat and 10 each of measles, typhus fever and unclassified pneumonia. There were reported five cases of poliomyelitis; the typhus fever cases were scattered over the state except that Orleans Parish reported four; the malaria patients came almost entirely from Jackson Parish.

For the week which ended December 15, influenza led reportable diseases with 47 cases, followed by 22 each of scarlet fever and diphtheria, 20 of hookworm infestation, 16 of typhus fever, 13 of pulmonary tuberculosis and 11 of unclassified pneumonia. It is interesting to comment upon the large number of cases of poliomyelitis reported at this time of year. For this particular week seven parishes reported a total of eight cases. Of the typhus fever cases five were listed from the City of New Orleans. So far this year there have been 394 cases of typhus fever as contrasted with 160 of typhoid fever.

The week ending December 22 was a remarkably healthy week, there being only three diseases recorded in numbers greater than 10, these being influenza with 44 cases, scarlet fever with 12 and pulmonary tuberculosis with 36. Not a single case of poliomyelitis was reported this week but there were seven cases of typhus fever.

TEN SECTIONAL MEETINGS ANNOUNCED BY AMERICAN COLLEGE OF SURGEONS

The American College of Surgeons announces the resumption in 1946 of its Sectional Meetings, which during the war were replaced by one-day War Sessions. Ten two-day meetings are planned, to begin in Minneapolis, with headquarters at the Radisson Hotel, on January 28 and 29. The second meeting will be held in Hotel Jefferson, St. Louis, January 31 and February 1; the third in the Tutwiler Hotel, Birmingham, February 8 and 9; the fourth in William Penn Hotel, Pittsburgh, March 11 and 12; the fifth in the Statler Hotel, Boston, March 18 and 19; the sixth in Mt. Royal Hotel, Montreal, March 22 and 23; the seventh in the Statler Hotel, Detroit, March 26 and 27; the eighth in the Utah Hotel, Salt Lake City, April 8 and 9; the ninth in the Multnomah Hotel, Portland, Oregon, April 12 and 13, and the last in the Biltmore Hotel, Los Angeles, April 17 and 18.

The medical profession at large, medical students, and hospital executives, are invited to join with the Fellows of the College in these meetings. The invitation has been extended to the entire medical and hospital profession because only local meetings of medical groups have been held during the past three or four years and the College recognizes the need for disseminating information about new methods and therapies through larger meetings addressed by nationally prominent speakers.

NATIONAL SOCIAL HYGIENE DAY

Throughout the country, national, state and local, civic, health and welfare groups will participate in this event on February 6, by holding conferences, meetings and discussions on the prevention of venereal diseases, promiscuity and prostitution during the months and years ahead.

Experience following the last war leads us to fear that there may be a great increase in the prevalence of the venereal diseases during the postwar years. The growth of public apathy to this problem can only be offset by information, education and publicity.

Your contribution toward National Social Hygiene Day will be greatly appreciated and will form an important part in the program for Better Health—Better Homes—Better Communities.

A physician is needed in Bonita, Louisiana. For further information communicate with Mr. Arthur Baggett, Baggett's Pharmacy, Bonita.

UROLOGY AWARD

The American Urological Association offers an annual award 'not to exceed $500' for an essay (or essays) on the result of some specific clinical or laboratory research in urology. The amount of the prize is based on the merits of the work presented, and if the Committee on Scientific Research deem none of the offerings worthy, no award will be made. Competitors shall be limited to residents in urology in recognized hospitals and to urologists who have been in such specific practice for not more than five years. All interested should write the Secretary, Dr. Thomas D. Moore, 899 Madison Ave., Memphis, Tenn.

H. W. E. WALTHER
1888 - 1946

A former editor of the New Orleans Medical and Surgical Journal and one of the best known urologists of the South died on January 6 at the Baptist Hospital in New Orleans. Dr. Walther's connection with the Journal was from 1923 to 1927. During his editorship the Journal was materially altered in size and in format. From a relative small pamphlet it was enlarged to its present size. The growth of his urologic practice compelled Dr. Walther to relinquish his editorial duties which he had carried on most successfully. In his special field, urology, Dr. Walther was nationally known. He was honored by election to the American Urological Association and was a member of the American Board of Urologists. At various times he was connected with the departments of urology at the Tulane Medical School and at the Louisiana State Medical School where he held professional rank. Dr. Walther was an active participant in the affairs of organized medicine. In 1917-18 he was treasurer of the Orleans Parish Medical Society. From 1930 to 1936 he was a member of the House of Delegates of the American Medical Association. At the time of his death he was president of the New Orleans Graduate Medical Assembly. A man of charm and of a delightful vigorous personality, Dr. Walther's death was a blow to his innumerable friends and patients. He will be greatly missed.

J. O. ST. DIZIER
1880 - 1946

Dr. St. Dizier met a tragic death on January 17. On the way to attend the wedding of his daughter the car in which he was driving with Mrs. St. Dizier and his two daughters was struck by a train. Both he and his wife died almost immediately and the daughters were severely injured. Dr. St. Dizier was a graduate of Tulane Medical School and had practiced in West Baton Rouge Parish for about 40 years. The respect with which he was held in his home parish was shown in 1944 when he was elected coroner of the parish.

BOOK REVIEWS

Textbook of Neuropathology: By Arthur Weil, M. D. New York, Grune & Stratton, 1945. pp. 356. 2d ed. rev. & enl.

After a decade of great usefulness, the first edition of Dr. Weil's book has been revised and enlarged to include data on the latest advances in neuropathology. Such newer knowledge derives especially from a better understanding of the vitamin deficiencies, discovery of the sulfonamides and their contribution to the therapy of meningitis, effects of different types of shock treatment and the pathology of experimental tumors of nervous tissues.

Neuropathology received its most valuable stimuli from work done in the German medical schools. With the increasing appreciation of neurology as an entity, in the medical schools of the United States, the need for textbooks in the English language on the fundamentals of neurology has greatly increased.

This volume has been designed to furnish a review of the present status of the field of neuropathology and contains numerous facts which have been scattered through a vast literature. It should enable the student to obtain a better understanding of the reactions of the nervous system in disease to clarify his clinical work and it should serve to help the neurologist to recall data and direct his attention to many unsolved problems in the etiology of nervous diseases.

A unique merit of this publication is its manner of combining the technical viewpoints of the pathologic laboratory with the broader biologic outlook of the clinic.

C. P. May, M. D.

Bacillary Dysentery, Colitis and Enteritis: By Joseph Felsen, A.B., M.D. Philadelphia, W. B. Saunders Co., 1945. pp. 618, pl. illus. Price $6.

In a timely, well-appointed 511-page volume, augmented by a 95-page bibliography, Joseph Felsen has condensed the literature on the subject and added his own editorial and clinical opinion. It is remarkable that an entity commonly considered at least a tropical disease be so extensively written upon by one whose studies emanate from the Bronx Hospital, New York.

The first section is dedicated to acute bacillary dysentery and in this 289-page well-organized presentation complete coverage itself in nine major military campaigns of the past and in our present strife, together with elaborate statistical evaluation of morbidity and mortality is indeed well prepared. Justification for more thorough and sincere consideration being given bacillary dysentery is evidenced in the author's demonstration that bacillary dysentery is increasing in incidence contrasted with diminishing occurrence of the other enteric fevers and an essentially unchanged degree of amebiases.

Epidemiology with evaluation of all contributing factors is stressed in minute detail. An excellent treatise of the clinical aspects follows. The bacteriology, serologic aspects, and pathology have each been given unusually thorough coverage for this type of presentation equalling clinicopathological research.

In therapeusis one finds a well edited review.

The reviewer finds this first section of the volume praiseworthy in every respect. The arrangement is excellent, the thoroughness is meticulous, the completeness is so presented as not to be burdensome.

The section dedicated to chronic bacillary dysentery is distressingly opinionated. The only conservatism is an evaluation of therapeutic results. Dissertation of length on ingestion oxygenation, advocation of Fortabex, "obtainable at Park-Vanderbilt Pharmacy, 64 East 34th Street, New York, N. Y." (no zone number mentioned) a not unusual polyvitamine preparation without indication for selecting this trade preparation, all detract from a volume which could have attained medical eminence.

GORDON McHARDY, M. D.

Law In Medical and Dental Practice: By Jack Neal Lott, Jr., and Robert Hanes Gray. Chicago, Foundation Press, Inc., 1942. Price $4.75.

The regulation of individual conduct has been a necessary by-product of all organized society and the supervision of activity and the adjustment of differences have always been a part of community life, and public concern has resulted in peculiar rules imposed upon physicians and dentists and the formulation of regulations which tend to prevent injuries resulting from unskilled conduct.

This work presents a synopsis of remedial and preventive measures and briefly reviews various phases of laws governing the practice of medicine and dentistry.

In collecting the data presented in this volume efforts have been made to secure cases and law review notes which may be understood by those not having a background in law. However, the authors state "The definition of law involves a problem concerning which jurists and legal scholars have not agreed."

Doctors are no better off, when trying to understand law, than lawyers are in attempting to comprehend medicine. Perhaps two great difficulties lie in the fact that the lawyer is chiefly concerned with the act a person commits and is too proud to believe that body and mind are separate. The doctor is primarily interested in the kind of individual who perpetrates an act and knows that the mind and body are inseparable and an individual must be considered as a whole. And he believes in the Tennysonian principle "I am a part of all that I have met."

While this treatise may, at first glance, appear to be somber, fact-bound and lacking in imagination, it is a profound, penetrating analysis of its subjects by two distinguished authors and teachers of law.

C. P. MAY, M. D.

Refraction of the Eye: By Cowan Alfred, M. D. 2nd Edition, Philadelphia, Lee & Febiger, 1945. pp. 278. Price $4.75.

The second edition of this excellent volume is a valuable addition to current ophthalmic literature. It will probably be extensively used as a text book in the better schools of postgraduate ophthalmology. Following a detailed table of contents, reflection and refraction of plane and spheric surfaces is explained in detail with simplified optical formulae. Then follow four chapters on lenses which in detail present the optical principles involved in the several types of lenses and their neutralization. The subsequent chapters are devoted to pertinent subjects of importance such as: the schematic eye; aberrations of the eye; accommodation, ametropia and testing methods. Both the bibliography and the alphabetical index are exceptionally complete for this book of less than three hundred pages, with its one hundred and eighty illustrations. Illustrative problems and their solution materially help the average reader understand the optical formulae presented. In the next issue, the advisability of more illustrative problems should be considered as well as a simplified explanation of the vertimeter, and other frequently used ophthalmic instruments directly associated with the refraction of the eye. Congratulations to the author for a difficult job well done!

CHAS. A. BAHN, M. D.

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CARCINOMA OF THE CERVIX

AN ATTEMPTED FOLLOW-UP STUDY OF 500 CASES. III. THE ROAD TO IMPROVEMENT IN RESULTS*

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AND
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New Orleans

In two preceding communications[1, 2] based on an attempted follow-up of 500 patients with carcinoma of the cervix treated at Charity Hospital of Louisiana over the five and a half year period ending July 1, 1937, certain important statistical data were summarized[1] and certain therapeutic and diagnostic considerations were discussed from the standpoint of the responsibility of the profession.[2]

The most important statistical fact was that of the 397 patients whom it was possible to follow-up, 358 are known to be dead, including two who survived for five and seven years, respectively, without recurrence, and 39 are known to be alive for periods varying from seven to 12 years after treatment. The most important therapeutic consideration was that during the years of this study the radiotherapeutic facilities of the hospital were utterly inadequate for the patient load, but that the best use was not always made of such facilities as were available. The most important diagnostic consideration was that at least 27 patients who consulted physicians outside of the hospital when their symptoms first developed received egregiously wrong advice, while the hospital staff was not always free from procrastination, lack of suspicion and other diagnostic errors.

The purpose of the third paper in this series is to analyze the end-results in these 500 cases from the standpoint of the patients' responsibility for their own fate, and to consider also how it would be possible to improve the results in this disease by the application of certain educational and prophylactic measures.

THE IDEAL OF EARLY DIAGNOSIS

The ultimate reason why the great majority of the 500 women in this series lost their lives from carcinoma of the cervix is the time at which they appeared for medical assistance. In the 477 cases in which it was possible to determine the approximate duration of the disease as related to symptoms, only 14 patients sought advice within a week of the onset of symptoms, and only 64 within a month. Two hundred seventy-three waited six months or more and 48 of these waited 12 months or more.

A vaginal discharge, with or without spotting, is the most frequent symptom of carcinoma of the cervix, and, judging by this series, is also the least heeded. Irregularities of menstruation, particularly at the time of the menopause, were next in point of frequency, and were also very likely to be disregarded. Many patients had histories of discharges and menstrual irregularities for long periods of time, but weeks or months before they appeared for

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*These studies were financed by a grant from the Helis Research Institute, Hotel Dieu, New Orleans.

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treatment had noted changes in the amount or character of the discharge or bleeding, to which they had usually paid no attention. In many cases the long duration of such symptoms (sometimes for as long as 10 to 15 years) made it impossible that the original discharge or bleeding could have been due to malignant disease. Pain and hemorrhage were the symptoms which brought the patients most promptly to the hospital, and it is perhaps significant that these were the presenting symptoms in 11 of the 39 patients who are known to be still alive.

How rapidly carcinoma of the cervix progresses it is not possible to say. It can be said positively, however, that while the *development of symptoms* brings the patient to the physician, the *onset of the symptoms* by no means coincides with the *onset of the disease.* Several patients in this series, for instance, were first aware of their condition when severe hemorrhages occurred; obviously in such cases the disease had already existed long enough to involve the vascular supply. Other patients were firm in their statements that the first symptom they had experienced was pain; obviously a disease which begins primarily as a histologic alteration does not give rise to pain until it has passed considerably beyond that stage.

The solution of the problem of carcinoma of the cervix is not therapeutic improvement, important as such improvement would be, but rather diagnostic improvement, which does not mean, as early diagnosis is usually interpreted to mean, seeing the patient immediately after the onset of symptoms. A fair number of patients in this series appeared at the hospital within two or three weeks, and sometimes within a few days, after their first symptoms, which usually took the form of hemorrhage, yet some of them had advanced, incurable, stage 4 disease. From the standpoint of symptoms the ideals of early medical consultation and early diagnosis were both achieved, yet their lives were beyond salvage.

Clearly we must go very far beyond urging the patient to consult a physician as soon as symptoms develop if we are to increase the salvage in carcinoma of the cervix. Until that fact is driven home, no improvements in therapy are likely to effect more than insignificant improvements in results. As Crossen[3] pointed out 15 years ago. the idea of constant, continuing attention to the pelvic organs *in the absence of symptoms* must be presented to every woman and kept before every physician. N. F. Miller[4] has the same concept when he writes that the whole attitude of the profession toward pelvic examinations must be changed, and that women must be educated from early childhood concerning their pelvic organs. He based his warning on the lack of improvement, from the standpoint of the stage of the disease, which he himself had observed over a 12-year period in the Gynecologic Tumor Conference at Ann Arbor. In 1931 the proportion of early cases was 4.2 per cent and of stage 4 lesions 54 per cent. In 1942 the proportion of early cases was 5.7 per cent and of stage 4 lesions 71.1 per cent.

A DIFFERENT EDUCATIONAL APPROACH

What all of this amounts to is that there must be a different educational approach to carcinoma of the cervix if the present results are the best that can be achieved by the efforts and money which have been spent on the education of the public over the past two decades. The ultimate responsibility for her own fate may be the individual's, but the profession cannot escape the responsibility of teaching women the correct facts about their genital health.

It is useful to spread the information that discharges and abnormal bleedings are the first symptoms of cancer of the cervix, but far more useful to hammer home the information that the time to detect the disease is before it causes symptoms, which is possible only when routine pelvic examinations are made. The method of approach, moreover. must be adapted to the intellectual and educational level of the women for whom the particular approach is intended. Commonsense is by no means confined to patients in the upper intellectual and financial levels, yet it seems hard to conceive that women of these strata, however foolish some of them might be, would permit bleeding to occur for weeks and months, 10 and 20 years and longer after the menopause and do nothing about it, as did many negro and some white women in this series.

In the same connection it would be well to direct some educational effort toward spreading the information that menopause means literally the cessation of monthly bleeding, and the further information that discharges and irregular bleeding are no more physiologic and no more to be tolerated without investigation during the climacteric than at any other period of life. As H. E. Miller[5] pointed out in his study of gynecologic deaths at the New Orleans Charity Hospital, this supposed physiologic era of a woman's life seems in many respects to be the most dangerous of her life. In his series, as in this one, not only the patients, but sometimes their physicians, who on occasion included the hospital staff, seemed to regard spotting, bleeding and discharges as a normal part of the menopause.

The educational program for carcinoma of the cervix must include some method of impressing upon the patient with the disease the fact that her life depends upon obedience to her physician's instructions and advice. One patient with hopeless malignacy in the Charity Hospital series had been seen on the gynecologic service two years before and had flatly refused to permit a pelvic examination, though her symptoms pointed clearly to carcinoma of the cervix. One patient whose malignancy was discovered when she entered the hospital at term declined to remain for treatment after delivery. Two patients refused to submit to irradiation for several weeks after the diagnosis had been made. At least 10 began deep-voltage therapy but refused to continue it when they learned its duration.

Twenty-six patients left the hospital against advice, several more than once, before the conclusion of treatment, and some of them were not seen again until their condition was hopeless. Some referred to the gynecologic clinic from other clinics waited weeks and somtimes months before reporting. Although no patient in the series was discharged from the hospital or clinic without a definite appointment for a return visit, many of them did not return until weeks or months, or in some cases a year or more, had elapsed, for two significant reasons, that they felt too well or that they felt too ill to come at the appointed time. The patients who felt too ill to return of course failed to realize where their possible salvation lay, and the patients who felt too well, and who did not return until they again felt ill, equally failed to realize it. The lack of the organization which is the secret of all successful therapy in carcinoma of the cervix is particularly apparent in these cases. It was nobody's responsibility to seek these patients out and bring them back because it was everybody's responsibility.

Both patients and physicians must share the responsibility for this situation. If it is necessary to scare patients to death, as Lord Moynihan once put it, in order to frighten them into life, that must be done. If it is necessary literally to lead them by the hand from clinic to clinic, or from ward to clinic or to X-ray Department, then that must be done. Whatever may be necessary to induce them to submit to diagnosis and treatment would be justified; their lives are at stake. If, after being fully informed as to the stakes, they still choose to throw them away, at least the physician will have done his duty.

But the patient is not likely to be impressed with the seriousness and urgency of her disease until physicians, who are supposed to comprehend its seriousness, begin to comprehend its urgency. These records are adequate proof that its urgency is still not realized. These women all had a deadly disease, and in the majority of cases their histories clearly pointed to the diagnosis. Yet literally dozens of examinations began with the statement "This patient is not seriously ill." That concept, as already intimated, must be radically changed. There is a story, which may or may not be apocryphal, that a certain physician in Philadelphia, the moment he saw in his office a woman with possible carcinoma of the breast, cancelled his remaining appointments and took her instantly to the hospital in his own car. Something of the same kind of urgency must be put into the minds and hearts of medical students and internes and residents concerning carcinoma of the cervix, and it must be put there by those who are now teaching and practicing gynecology, the practice probably being more important than the precept.

The attitude toward re-examinations on the part of the 39 survivors is also worth recording. Only four still report regularly to the clinic at six-month intervals. All the others were asked if they would be willing to return for examination at this time. A number replied that they would willingly return if arrangements (that is, financial provision) could be made, but that they could not come otherwise. Several declined, on the ground that they regarded themselves as well and not in need of treatment; one of this group wrote, "I have had no trouble with my womb lately." A white patient was willing to return if the chief of the gynecologic service would attend her personally, but under no other circumstances. The daughter of one patient answered the letter, with the request that no further communications be sent because her mother had been so upset by the inquiry. Another patient declined to return for examination, adding, "I am well, and I am alive, thank God. But if I was sick, I would certainly be hurt by such questions as you sent me."

No attempt is made to report the 39 survivors in this series as cured patients. They are merely reported as salvage. Only four have been examined recently. That the majority, in view of the lapsed time and their reported activities, are free from disease seems likely. But their attitude toward questions concerning their health, and their lack of cooperation in respect to, and their complete lack of realization of the necessity for continued examination is further proof of the need for a new educational approach in carcinoma of the cervix, with emphasis, among other things, on the importance of continued observation all of their lives if they hope to remain free from disease after they have been treated.

In this connection it might be added that information concerning the death of one of these patients was secured from her daughter, who took the opportunity to express her anxiety concerning her own condition. She had had a supravaginal hysterectomy five years ago, and for the last 18 months had had a vaginal discharge. In view of her mother's disease she feared carcinoma of the cervix. That she might have visited the clinic on her own volition did not seem to have crossed her mind. She was instructed to enter the hospital, and clinically her pelvic examination suggested carcinoma of the cervix. The biopsy, unfortunately, was not properly taken, and a second specimen was requested. The patient was advised to return for a second examination, but at the end of four months she has still failed to keep the appointment.

The records from Charity Hospital show that only one patient sought medical attention because she feared she had cancer. She is among the survivors, but her attitude is somewhat less impressive than it might be because in the intervening seven years since she was first seen she has also thought that she had at least a dozen other diseases; as a matter of fact, the last word of her was a request for information from another state hospital, in which she was being examined for possible gallbladder disease.

The patients in this series were not specifically questioned, it would seem, as to what they knew of cancer and no statements can therefore be made on this point. A study from the New Haven Hospital by Harms and his associates,[5] however, might be cited as indicating the results of the present educational approach. Almost none of the 158 patients in their series feared that they had cancer. Only 13 per cent thought of cancer as a possible cause of their symptoms. Only 6 per cent had ever read anything about the disease, and all but two of these had secured their information from the lay press. In the light of these facts, all the educational efforts which have been lavished on the public for so many years seem rather futile. One can only applaud recent decision to coordinate all cancer research and exchange knowledge of progress, and one must rejoice, of course, over the recent large grants for investigation of the disease. But until the cause of cancer is discovered, the solution of its diagnostic and therapeutic problems lies in the hands of the clinicians, whose first weapon would seem to be a new and different educational approach to their patients.

THE PROPHYLAXIS OF CARCINOMA OF THE CERVIX

The salvage in malignant disease of the cervix will be greatly increased when all physicians, and particularly all general practitioners, begin to include questioning as to the menstrual habit and an investigation of the pelvic organs as part of the investigation of whatever non-pelvic disease brings the patient for advice. The same holds for ophthalmologists and otolaryngologists and dermatologists and other specialists who see patients for non-gynecologic causes. The gynecologist, as a matter of fact, under the present system of practice seldom sees the patient before she has symptomatic carcinoma of the cervix. Routine pelvic examination, with gynecologic investigation of every questionable or suspicious case, is not an impracticable ideal for all women admitted to public hospitals for whatever cause, and would undoubtedly result in an enormous salvage in carcinoma of the cervix. The lives lost in this series because that plan was not observed have been commented on in another paper of this series.[2]

The last report of Macfarlane and her group[6] in Philadelphia is clearcut proof of the value of routine pelvic examination in the absence of pelvic symptoms. Since 1939 this group of physicians at the Women's Medical College have been performing pelvic examinations on volunteers who promised to report twice yearly over a period of five years. All, of course, did not keep their pledges, but up to 1944, 9,111 visits had been paid by volunteers who appeared regularly and by 545 others who appeared irregularly. Eighteen instances of carcinoma of ten different organs were thus discovered, including four early cases of carcinoma of the cervix, one of which was discovered on the *eleventh* examination. All four of these women are alive and well today. On the other hand, only two of the 500 Charity Hospital cases were discovered in the absence of symptoms, one in the course of an investigation for the cause of headaches, and another in an investigation of asthma. The latter patient is included among the survivors; the former's disease was far advanced when it was accidentally discovered.

One of the problems associated with routine pelvic examination is the decision as to how often it should be carried out. The difficulty is not so much to induce the patient to submit to the first examination as to educate her to come for repeated examinations. In general, it may be said that a woman who is examined yearly from the age of 25 to 35 years, and twice yearly thereafter, has taken adequate insurance against the development of cervical cancer.

An interesting project along the lines of prophylaxis has recently been reported by the Medical Society of Milwaukee County,[7] which has opened a cancer detection center in the student health center annex to Marquette University School of Medicine. The project met with such success that permanent offices, with a full time secretary, are now being considered. During the first three months of its operation, 798 persons were examined, 41 of whom had cancer, which in 18 instances had not previously been diagnosed. Cancer was a possible diagnosis in 74 other patients. The operation of such centers by other medical societies might help to solve the problem of routine pelvic examinations.

Prophylactic Cervical Repair: The exact effect of parity upon the development of cervical malignancy is still not clear, but of the very high incidence of the disease in parous as compared to non-parous women there is no doubt. In many instances in this series it was impossible to determine whether or not lacerations of the cervix preceded the malignancy because the structural relationships were destroyed by the extent of the malignant process. It is fair to assume, however, that the cervix of a parous woman never returns to its original state of integrity because full restitution of cervical tissue does not occur after even an easy labor; some evidence of the process, physiologic though it may be, always remains. It is also reasonable to assume, though positive statements to this effect were made in only a few cases, that many of these women were delivered by midwives and had entirely inadequate care at delivery. This is a particularly reasonable assumption concerning the 312 women from the country, 196 of whom were negroes. The great majority of these women lived in small towns, among which, in Louisiana, the distribution of physicians is particularly poor and the proportion of deliveries by midwives, who are practically always untrained, is extremely high.

It is a significant fact that not a single patient in this series had had a cervical repair or any other treatment of the cervix except for two who were cauterized when supravaginal hysterectomy was done. Routine examination and treatment of the cervix after delivery would seem a possible method of reducing the incidence of carcinoma of the cervix, which has a tendency to develop in areas of erosion such as are often observed after childbirth. The disease developed in areas of this kind, as a matter of fact, in three of the four instances of early malignancy identified by Macfarlane and her associates[6] in their program of routine pelvic examination.

THE SOCIAL ASPECTS OF CARCINOMA OF THE CERVIX

For various reasons the period of observation in these 500 cases was short, being over 12 months in only 109 cases. Many of the patients had died within this period, and many others were dying, while a large number had drifted from observation. Two reasons for the brevity of observation in the surviving patients present themselves: the large proportion of patients from out of the city, and the economic factor in patients of this level.

One of the great difficulties in this series was the management of patients from out of the city who were discharged from the hospital to continue deep-voltage therapy because they were physically able to be ambulatory. Hospital facilities, particularly before the new Charity Hospital was built, were not such as to permit the continued hospitalization of women who did not need hospital care. Yet indigent patients from the country frequently found the necessity of remaining in the city, at their own expense, for two or three weeks after discharge a problem so difficult of solution that many of them solved it by going back to the country and not returning at all, or not returning until their state was hopeless. The operation of a convalescent home in connection with the hospital has improved, but not wholly solved, this problem at the present time. This practical social difficulty apparently was responsible for a surprisingly large number of deaths in this series.

The economic factor in carcinoma of the cervix is apparent in another set of figures from this report. As already noted, 312 patients were from the country and 188 from the city or from immediately adjacent parishes. While it is difficult to put such facts in statistical form, it seems significant that of 95 patients (exclusive of patients who died on their first admission to the hospital) who were observed only once, 71 were from the country. Clearly carcinoma of the cervix cannot be managed properly in one period of hospitalization and observation. To one familiar with the circumstances of these patients it is a reasonable assumption that the necessity for repeated visits to the hospital was an insuperable financial difficulty, which was often increased among women who were mothers of young children, who lived in isolated parts of the country, who were unable to arrange for their care in their own absence, and who simply failed to return for observation and treatment. A number of patients followed up by letter or through the Social Service Department frankly stated that they had not returned for these reasons.

THE PROBLEM OF THE HOPELESS PATIENT

The most tragic group of patients in this series consists of the 24 white and 50 negro women who were sent out from the hospital, immediately after they were first seen, or later, when therapy had proved futile, to die at home. Some of those traced had died promptly. Others had lived for months before they were "relieved by death." To have kept them longer in the hospital could not have saved them and would have deprived of the chance of cure other patients whose salvage was still possible. But when one recalls the type of home to which indigent patients, particularly negro patients, must frequently return, and the dreadful death that cervical malignancy so often entails, it is hard to contemplate with equanimity the fate of these unfortunate women.

Philanthropic and public health funds could not be spent to better advantage than in the provision of nursing homes for such patients to ease their last days. Their fate at the present time is unfortunately no better than it was in the period covered by this study. The hospital cannot hold them indefinitely, for its facilities are still limited and must be utilized for those who can be helped, and a convalescent home is designed for those who are going to live and obviously does not solve the problem of women who "carry the candle of death in their hands."

SUMMARY

This is the last of a series of three papers on an attempted follow-up study of 500 patients with carcinoma of the cervix treated at the New Orleans Charity Hospital over an approximately five and one-half year period ending July 1, 1937. Thirty-nine of these patients are known to be still alive and 358 are known to be dead.

The ultimate reason why most of the women in this series lost their lives from carcinoma of the cervix is the time at which they appeared for treatment. Therefore early medical consultation is the first step toward improvement in results. The onset of symptoms, however, which brings the patient to the physician, does not coincide with the onset of the disease, and the solution of this phase of the problem is an educational approach based on continuing attention to the pelvic organs in the absence of symptoms.

Other phases of this new educational approach include the dissemination of information concerning (1) the fact that menopause means literally the cessation of menstruation and (2) the fact that the salvation of every patient who has, or is suspected to have, this disease depends upon strict obedience to the physician's advice.

It is again pointed out that the physician is responsible for the education of his patients; that he must himself comprehend the urgency of diagnosis and treatment in this disease; and that *all* physicians, and not merely gynecologists, must share this responsibility.

Routine pelvic examination at regular intervals in the adult years represents the only method of translating these objectives into practice. Attention to the cervix after childbirth would also be helpful.

The economic and social factors implicit in carcinoma of the cervix are discussed, and attention is directed to the tragic plight of women who are discharged from the hospital because treatment is useless and the facilities of the institution must be saved for those who can be helped.

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RUPTURE OF THE ILEUM IN UREMIA

VINCENTE D'INGIANNI, M. D.
and
HAZEL ANN D'INGIANNI, M. A.
NEW ORLEANS

Rupture of the small gut in uremia is rare. A survey of 175 autopsied cases of patients dying of uremia at Charity Hospital in New Orleans between 1923 and 1943, revealed not one case in which the small gut showed perforation. Although reports on gastrointestinal pathology as observed in uremia are not entirely lacking (witness Jaffe-Laing's thorough study of 136 autopsied uremic deaths in 1934), however, none of the reports mention rupture of the small intestine. Only the Europeans gave any report of actual perforation: Mackey, who presented one case in 1909, and Guth, who presented two cases in 1914.

The purpose of this paper is to present two cases, one in which actual perforation occurred, and another in which there was ulceration to the serosa, but not through it. In addition, a review of the intestinal pathology found in the autopsied cases at Charity Hospital as seen in the light of these two clinical cases and the literature seems in order.

CASE No. 1

At first examination, October 30, 1941, L. M., a white female, aged 21, was apparently poorly nourished and showed loss of weight. Her skin had a yellowish cast with marked brown blotches. She complained that the slightest exertion caused dyspnea, palpitation, and numbness of the hands. She had frequent fainting spells, as often as three a day. Her vision had been becoming progressively worse for the last nine years. In spite of the loss of weight her appettite was excellent. However, she was unable to eat fatty foods.

At the age of six the patient had scarlet fever, followed by nephritis. She had a tonsillectomy. There was no familial history of nephritis. Until recently she said she had enjoyed good health.

Physical findings were a heart definitely enlarged; systolic roughening of the aortic valve with a prolonged diastolic sound. Heart tones in general sounded like the beat of a tom-tom. There was marked leukorrhea.

February 8, 1942, the patient was taken with pain in the lower abdomen, accompanied by nausea. She developed rigidity and tenderness over the lower right quadrant. Her temperature at the time was 100°. She was admitted to the hospital and diagnosed as acute appendicitis with possible peritonitis. White blood cell count was 31,000 with a 97 per cent neutrophil count. She was prepared for operation.

Upon opening the abdomen under local anesthesia of 2 per cent novocaine she was found to have profuse peritonitis. The intestines were matted together. There were approximately three quarts of yellowish fluid in the abdomen. Upon delivering the cecum, a normal appendix was found. Upon exploring the ileum, there were many points of perforation and areas of submucosal hemorrhage and ulceration. Approximately sixteen inches of terminal ileum were resected. Sulfathiazole was placed in the abdomen, and the abdomen was closed incorporating a drain to the peritoneum. The patient was given supportive measures, but in spite of these her condition became grave and she died on February 10, 1942.

A synopsis of the pertinent laboratory findings are given here:

On November 3, 1941, PSP 17.5; NPN 35 mg. per 100 c. c. blood; urine heavy with albumin and casts. January 28, 1942, NPN 76.4 mg.; plasma 5.11 mg.; creatinine 4.8. January 31, 1942, NPN 114 mg.; creatinine 5. February 2, 1942, protein plasma 6.16. February 10, 1942, NPN 100 mg.; creatinine 30 mg.

During the interval between October, 1941, when I first examined this patient and February, 1942, when she became acutely ill, she entered the Charity Hospital in New Orleans (January 25, 1942) and was treated for malignant nephrosclerosis.

Autopsy findings: Peritoneal cavity contained 1000 c. c. of amber-colored fluid with fibrin. Loops of ileum were adherent with no evidence of obstruction. A recent end to end anastomosis was seen in the lower ileum. Each pleural cavity contained 150 c. c. of straw-colored fluid.

The pericardial cavity contained 200 c. c. of straw-colored fluid. The pericardium was roughened, and showed a small amount of yellow granular exudate.

Lungs: The upper lobes showed extensive areas of pneumonitis.

Gastrointestinal tract: The stomach and duodenum demonstrated no evidence of pathology. The jejunum presented areas of hemorrhage and ulceration. The ileum, from the cecum extending upward for about two feet, had numerous small areas of ulceration on the antemesenteric border of the bowel. These ulcers varied from one-half centimeter to three centimeters in diameter. There is no evidence of ulceration except at the antemesenteric border. Many of the ulcers perforated the bowel. Peyer's patches showed no involvement.

Microscopic findings: Congestion and dilatation of the vessels in the mucosa and submucosa with marked sclerosis of the deeper vessels. The vessels in the mucosa showed leukocytic infiltration into the perivascular space with thrombosis. The kidneys showed cloudy swelling of the tubules, degeneration, atrophy, and many of the tubules were cystic. Glomeruli were fibrosed and obliterated. The blood vessels in general showed evidence of sclerosis with thickening of the medial coat.

CASE No. 2

Since 1936, this patient, M. S., white female, aged 21 years, had been feeling badly, losing weight, and having frequent headaches. She had been in and out of several hospitals. She had been growing progressively worse and found it necessary to sleep on more than one pillow.

Childhood illnesses included measles; mumps; pertussis; diphtheria at the age of three, necessitating tracheotomy; appendectomy at age ten; tonsilectomy with severe hemorrhage at age five. No familial history of nephritis.

Physical findings: Blood pressure 205/150. The mucosal membrane was pale. The heart was markedly enlarged; mitral first sound was associated with a blowing murmur; aortic first sound was prolonged. Changing of position accelerated the rate.

June 15, 1942 the patient was taken with a severe headache, blood pressure was 240/200. The headache was controlled only by morphia. She became progressively worse. The blood pressure could not be brought down and the vision became poor. She had nausea and vomiting. After being admitted to Mercy Hospital (November 11, 1942), she began having severe pains in the abdomen, rigidity, marked tenderness, distention, rising temperature. It appeared that there was peritonitis superimposed on uremia. The patient died December 13, 1942.

Autopsy findings: Peritoneal cavity containing 1800 c. c. of straw-colored fluid, exudate over coils of small intestine. Pericardial cavity contained a large amount of hemorrhagic fibrinous exudate. The parietal and visceral layers were rough and red. Pleural cavity: The left cavity contained 200 c. c. of straw-colored fluid; the right cavity contained about 50 c. c. The heart showed left ventricular hypertrophy. The lungs showed numerous small hemorrhagic areas. The gastrointestinal tract contained hemorrhagic semisolid substance throughout. The mucosa of the ileum was edematous, exhibiting hemorrhagic areas in its lower half. The last two feet of the ileum contained numerous small ulcers, many of which penetrated to the serosa, which in that area showed evidence of irritation by a thick purulent exudate. The kidneys were small and granular, both weighing 85 grams.

Microscopic findings revealed marked congestion of the vessels of the mucosa and submucosa, with leukocytic infiltration of the perivascular spaces, sclerosis of the deeper vessels, many of which were obliterated. Kidney tubules showed cloudy swelling, degeneration, atrophy, and cystic changes. The glomeruli were fibrosed and obliterated. The blood vessels in general showed marked sclerosis.

COMMENT

Both of these patients were young, white females of about 20 years, who in early life had a dangerous childhood disease: in one case, diphtheria, in the other, scarlet fever. Both were suddenly stricken with progressive uremia, followed by glomerular nephritis. Both cases presented unusual findings in that the terminal ileum showed evidence of ulceration and perforation without involvement of the gastrointestinal tract above or below this area. Microscopic findings elsewhere along the tract were normal. Both cases presented marked generalized sclerosis of the vessels.

These autopsy findings are similar to those pointed out by Pineau, and more recently elaborated upon by Jaffe-Laing. One is forced to ask why such lesions did not occur in the excretory portions of the intestinal tract. If the old theory of Treitz is to be upheld, one should assume that in every case of uremia, there should be some pathologic findings in the gastrointestinal tract, particularly in the stomach, and the duodenum where a great number of secretory glands are located. One is forced to ask why other parts of the intestinal tract were not involved.

It appears that the vascular system may be the point from which ulceration proceeds, and that not only the vessels of the kidney are involved in certain childhood diseases, but the whole vascular tree shows evidence of sclerosis. Gastrointestinal pathology is not secondary to the uremia, but a part of the modus operandi. These two cases verify this assumption in that there was evidence of sclerosis in all of the vessels. This explanation would also account for the random intestinal pathology.

Of 175 cases of patients dying of uremia and autopsied at Charity Hospital in New Orleans during the past 20 years, 160 showed gross evidence of gastrointestinal disturbances. In 75 cases actual hemorrhage was found. Of these the location was stated in 56 cases, distributed as follows:

Stomach 12, duodenum nine, jejunum four, ileum four, colon 26, rectum one.

In a study of these cases, the point most frequently involved was the junction of the ascending and transverse colon, and at this site the only case of perforation with peritonitis was found.

Actual ulceration was found in 13 cases, distributed as follows: Stomach one, duodenum 0, jejunum three, ileum one, colon seven, rectum one.

In one case of this group there was ulceration in the entire length of the tract, from the stomach to the descending colon. In another, only the ileum and the jejunum were involved. The rectum alone was involved in one case.

DISCUSSION

Pathologic changes of the intestinal tract in uremia are said to occur in 23 per cent of the case autopsied by Fischer. Jaffe-Laing found slight to marked pathologic changes in all of the 136 cases autopsied. Of his entire series, 37 (27.19 per cent) presented edema of the submucosa of the large gut; 72 (52.9 per cent) showed hemorrhage in the mucosa; 27 (19.8 per cent) showed ulcerative changes, with the majority of such changes occurring in the colon. The duodenum was not involved. It was noted in this group that glomerular nephritis had the largest percentage of ulceration. Microscopic findings demonstrated an inflammatory process occurring in the nerve endings, due to a diminution in blood supply. This resulted from a leukocytic perivascular infiltration and thickening of the submucosa, with an increase in the connective tissue fibers.

It is interesting to note that when these pathologic changes were first pointed out by Treitz in 1859, he attempted to explain the etiology of the ulceration. He stated that the ammonium carbonate, the split product of urea, acted as an irritant. His statement is substantiated by the fact that the drug, ammonium carbonate, when administered in large doses, causes intestinal irritation and ulceration. Furthermore, the general glandular system attempts to rid the blood stream of nitrogenous bodies in the products of the glands.

However, Treitz's theory met a great deal of criticism, for it did not satisfactorily explain several factors: for example, those pointed out by Pineau in 1889, which are: (1) There is a definite pattern of pathology in the perivascular spaces as well as in the vessels; (2) there is irritation of the nerve endings; (3) there is usually sclerosis of the vessels, although this is not a constant finding. These findings of Pineau found support in Jaffe-Laing's report. Likewise, the two clinical cases herein presented as well as the 175 cases from Charity Hospital add their evidence on the side of Pineau and Jaffe-Laing and tend to disprove Treitz's theory.

SUMMARY

The two cases herein reported showed perforation of the small gut as an aspect of uremia, a condition which may be regarded as rare after a survey of the literature and of the records of a large institution over a period of 20 years. It has been shown that the entire vascular system is involved in the disease, and that gastrointestinal pathology is a fundamental phase of uremia.

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HERNIATION OF THE TEMPORAL LOBE INTO THE CEREBELLAR FOSSA

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and

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It might be of interest to others besides neurologists and neurosurgeons to know that internal hernias of the brain occasionally occur. The case to be reported illustrates herniation of a portion of the temporal lobe through the incisura of the tentorium into the cerebellar fossa of the skull. The cause of the hernia was a tumor. However, before this case is presented, it might be well to mention some of the other types of brain hernias.

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It is now generally known that portions of the cerebellar hemispheres (tonsils of the cerebellum) usually herniate through the foramen magnum when the cerebellar fossa becomes crowded by the presence of a tumor (fig. 1). Such tumors not only take up an ever enlarging space but they also compress the aqueduct of Sylvius or the fourth ventricle to produce internal hydrocephalus and high intracranial pressure. In such instances the tonsils of the cerebellum, which lie near the foramen magnum, herniate through that foramen into the spinal canal, at times reaching the level of the second cervical vertebra. Spinal puncture is a dangerous procedure if the patient has herniation of the cerebellar tonsils into the spinal canal because lowering of intraspinal pressure by withdrawal of fluid permits the tonsils to become a little more tightly impacted about the medulla. If this additional medullary compression is sufficient to embarrass the blood supply, death may take place within minutes or hours. Because of this possibility, it is almost universally agreed that both spinal puncture and spinal air injection for encephalography are contraindicated in patients who have signs and symptoms of a tumor or abscess of the cerebellum. A few surgeons believe that spinal puncture and spinal air injection are contraindicated in all cases of probable brain tumor.

The commonest type of internal brain hernia involves the cerebral hemisphere. Partial herniation of one cerebral hemisphere under the falx (the dural septum which partially divides the cerebral cavity into right and left sides) occurs whenever there is a large space-taking lesion in one hemisphere.

A third common type of intracranial hernia, the one with which this communication is concerned, occurs when a portion of one temporal lobe is forced through the incisura into the posterior fossa of the skull. It will be recalled that the tentorium, a septum of dura, almost completely separates the cerebral fossa from the cerebellar

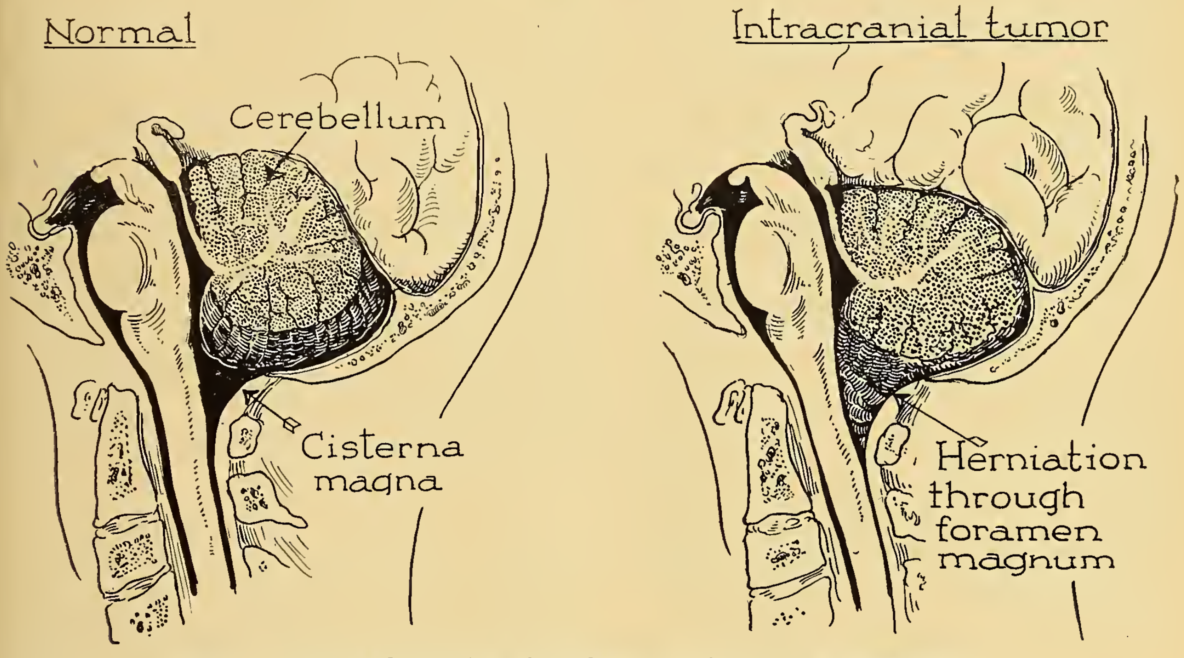


Fig. 1: Diagram illustrating herniation of cerebellar tonsils into the spinal canal.

fossa. In this septum is an opening called the incisura or notch which measures about 5 x 2.5 cm. in its anteroposterior and transverse dimensions. This opening accommodates the midbrain (peduncles and other structures). If a tumor of the cerebral hemisphere, especially the temporal lobe, or a chronic subdural hematoma obtains large dimensions, there will be a tendency for the crowded hemisphere to migrate in two directions: across the midline and down through the incisura in the tentorium. The portion of the cerebral hemisphere involved is the inferior, medial part of the temporal lobe (hippocampal gyrus). When this portion of the temporal lobe herniates into the posterior fossa, the midbrain is pushed to one side and becomes compressed between the hernia and the free edge of the tentorium (fig. 2). Such compression of the midbrain may lead to "paradoxical" neurologic manifestations, such as hemiparesis or dilated pupil on the same side as the lesion, especially in the case of subdural hematoma or middle meningeal hemorrhage. As pointed out by Scheinker, herniation of the temporal lobe is eventually followed by herniation through the incisura of the rostral portion of the midbrain. This leads to strangulation of the venous system draining the midbrain with resulting perivenous hemorrhages in the brain stem. This is apparently the immediate cause of death in many supratentorial tumors.

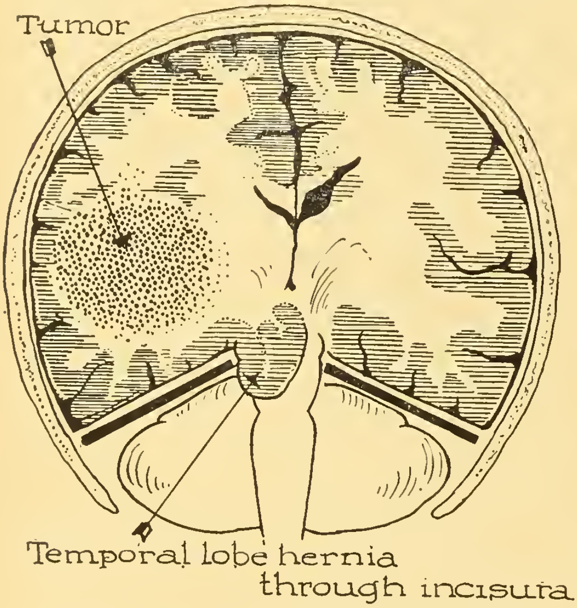


Fig. 2: Diagram showing herniation of a part of the temporal lobe through the incisura into the cerebellar fossa of the skull.

CASE REPORT

J. H., a 44-year-old white man, was admitted to Charity Hospital in New Orleans, March 11, 1944, in a semicomatose state. The history was obtained from his wife.

The first abnormality was noticed in August, 1943, when the patient would suddenly turn to his wife and ask, "Did you smell that?" or "What is that terrible odor?" The patient could not understand why others around him could not detect these unpleasant odors. These uncinate fits would last 45 seconds, during which time the patient would become pale and would start chewing movements. During the following months his general behavior changed and he appeared peculiar to his wife. He had a generalized convulsion in November, 1943; many others occurred despite therapy for epilepsy given by his physician. He was admitted to a private hospital February 2, 1944, in a state of complete confusion and was unable to give any information about himself. At that time he was too weak to stand, would wet the bed and made almost constant restless movements of the right arm and leg.

He was seen in consultation by one of us and a presumptive diagnosis of tumor of one temporal lobe was made. Transfer of the patient to his home and then to Charity Hospital required five weeks because of poor cooperation by relatives.

On examination March 11, 1944, the patient was found to be malnourished and irrational. There was slight exophthalmos; the pupils reacted sluggishly to light; the optic disks were normal; there was definite facial weakness on the left; all tendon reflexes were symmetrically hyperactive; the left abdominal reflexes were absent; and the left plantar reflex was pathologic.

Laboratory investigations revealed the following findings. The Kline and Kolmer reactions were negative. Examination of the spinal fluid showed cells 13; Pandy's reaction 1 plus; Kline reaction strongly positive; Kolmer test unsatisfactory; gold curve 0012320000.

Roentgenograms of the skull revealed no evidence of intracranial pathologic lesions. An encephalogram (spinal air injection) made on March 16, 1944, showed a marked shift of the third and lateral ventricles to the right. A diagnosis of probable glioblastoma of the left temporal lobe was made. The relatives were opposed to craniotomy and no good reason for insisting on it could be found.

On March 17, 1944, the patient became more deeply comatose and exhibited increased twitching of the right extremities. At two o'clock in the afternoon of March 18, 1944, the patient suddenly stopped breathing although the pulse was strong. Artificial respiration was immediately administered by the intern and 2 c. c. of metrazol injected intravenously. A spinal puncture was done at 2:40 p. m., and 25 c. c. of xanthochromic fluid under increased pressure was removed. The pulse had stopped just before the puncture was done but started within thirty seconds of removal of the fluid. The patient expired at 3:15 p. m.

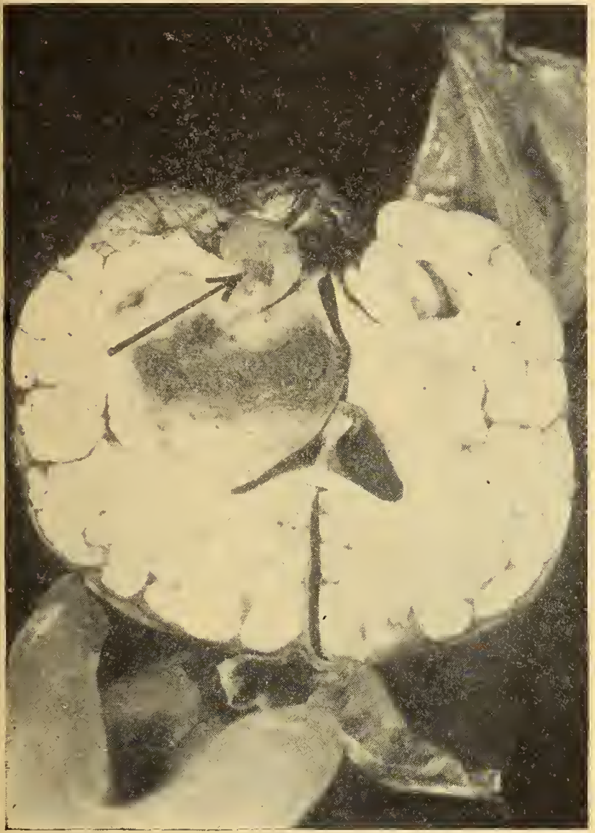
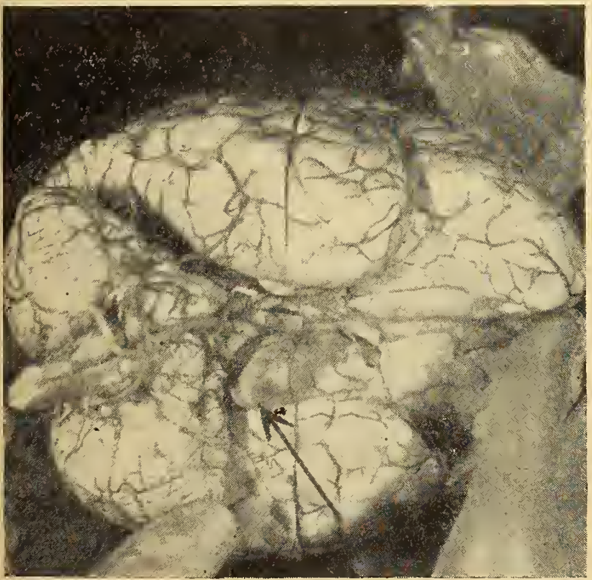


Fig. 3: A coronal section through the incisural hernia as well as through the tumor.



B. Arrow indicates the incisural hernia. Note the distortion of the midbrain.

The histologic diagnosis following necropsy was glioblastoma multiforme of the cerebral hemisphere. There was marked herniation of the inferior medial portion of the left temporal lobe through the incisura (fig. 3).

DISCUSSION

This is the best example of incisural hernia that we have encountered. It is unlikely that larger hernias occur. In spite of prominence of this hernia, compression of the midbrain did not result in complete hemiplegia nor inequality of the pupils. However, there were a few signs pointing to compression of the contralateral peduncle. The spinal puncture and spinal air injection, both obviously risky procedures in this case, may have hastened death. The pneumo-encephalogram was made to determine whether or not the patient was dying of a far advanced and inoperable glioma of the temporal lobe.

SUMMARY

Several varieties of internal brain hernias are briefly described with the thought that the subject might be of some general interest. A case illustrating herniation of part of a temporal lobe into the cerebellar fossa is reported.

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OSTEOID SARCOMA OF THE BREAST*

A CASE REPORT

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This case is of interest for several reasons: First, it is one of an unusual breast neoplasm; second, it presented another and unrelated type of new-growth in the same breast; and third, it marked the first time in my experience that a patient ever consulted the pathologist preoperatively. This she did, I am convinced, because she wanted to see what manner of person was going to examine the tissue and determine whether or not she would lose her breast; but it did afford me the opportunity to get a first-hand history and examine the lesion, and for this I was deeply grateful.

CASE REPORT

A white female, aged 55 years, was admitted to Hotel Dieu on February 12, 1945, complaining of a lump in the right breast. About eight months before she had struck her breast a slight blow, to which she paid little notice, but a few days later she discovered, at the site of the trauma, a lump which was slightly painful and tender. Motion of the arm, particularly extention, caused some slight pain described as "sticking" in character. These symptoms persisted until the time of admission. The tumor increased very little in size for six months, but then began to grow rapidly, doubling in size during the two months previous to hospitalization.

Examination revealed a well developed and well nourished white female, not acutely ill, but somewhat nervous. Except for a tumor in the right breast, no other pertinent physical findings were demonstrable. This tumor, located in the upper mid-portion of the gland, was rounded, firm, slightly tender, and about the size of a "moderately large orange." It was not fixed to the underlying tissue, nor to the overlying skin, and was quite freely movable. No enlarged axillary, supra- or infraclavicular lymph nodes were palpable, nor were any masses felt in the opposite breast.

The laboratory findings were non-contributory, but an x-ray revealed a well circumscribed and relatively opaque globular mass deep in the breast substance, showing no evidence of calcification.

Under general anesthesia a radial incision was made over the mass, which was then widely excised. Frozen sections of it were made, stained and immediately examined. It was reported as being malignant; but, with this type of preparation, could not be definitely classified. A radical mammectomy was performed, and again no enlarged lymph nodes were encountered. The postoperative course was uneventful and she was discharged on February 24, 1945.

A course of deep x-ray therapy was outlined for her, but she received only about one-third of the prescribed dose; for at this time she became quite uncooperative, stopped coming for treatment, refused to have diagnostic roentgen studies made of her chest and long bones, and was lost track of until February 27, 1946, when she reported by telephone that she was symptom free.

PATHOLOGIC FINDINGS

There were two separate specimens. The first (fig. 1) measured 6 cm. in diameter and was composed of a well circumscribed but unencapsulated globular tumor, slightly lobulated and fairly firm in consistency, measuring 4 cm. in diameter, and surrounded by fat and breast tissue. On section, the cut surface, pinkish to yellowish ivory in color, bulged somewhat, was divided into indefinite lobules by thin fibrous septa, and presented irregular areas of either yellowish gray or hemorrhagic softening.

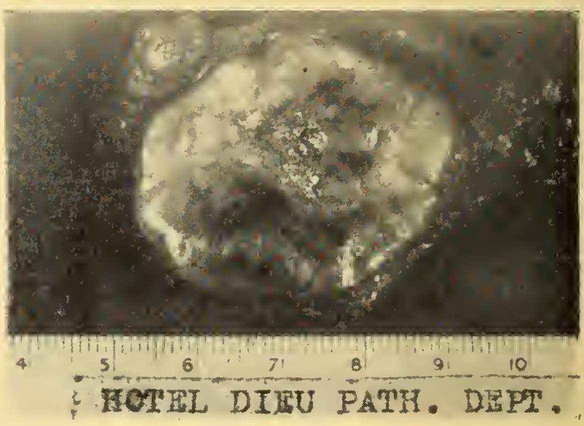

Fig. 1. Osteoid sarcoma of breast, showing the cut surface.

The other specimen consisted of a breast with the tissue of the axilla attached. A radial incision through the skin of the upper mid-portion was present through which the first specimen had been excised. The organ was sectioned serially in slices about

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1 cm. thick and quite fortuitously the knife passed through an irregularly and poorly outlined firm mass of tissue, 4 mm. in diameter, with a depressed cut surface which was gray in color and flecked with yellow. This tumor was located in the mid-portion of the outer hemisphere. Elsewhere the fibrous elements of the breast were somewhat increased in amount. No axillary lymph nodes were found.

Microscopically, the larger tumor was composed of cells which showed the most remarkable pleomorphism with all the variations grading insensibly into each other. At one extreme were moderate sized spindle cells, fairly uniform in appearance with a considerable amount of intercellular collagen fibers arranged in intertwining fasciculi. The cytoplasm of these cells was fibrillar, and the nuclei relatively large, with the chromatin in the form of coarse granules. Scattered among these cells were also found, in many places, larger cells of the same type. In still other areas these larger cells predominated, varied considerably in size, were less fusiform, more polymorphous and irregularly arranged. Their cytoplasm was granular. There were much fewer intercellular fibers between these cells but in many places there were irregularly outlined islands of oxyphilic amorphous intercellular substance with small cells enclosed in spaces within them. These islands were identified as osteoid tissue (fig. 2). Among the larger cells there were also numerous giant cells, some containing many vesicular nuclei with a tendency to be peripherally arranged, others having one to three larger nuclei more centrally located. Numerous mitotic figures, most of them of abnormal and bizarre form, were found throughout the tumor. Several areas of coagulation necrosis and of old and recent hemorrhage were present. The blood vessels were rather scarce and their walls composed of either a single layer of endothelium or of the tumor cells themselves. This newgrowth was diagnosed as an osteoid sarcoma.

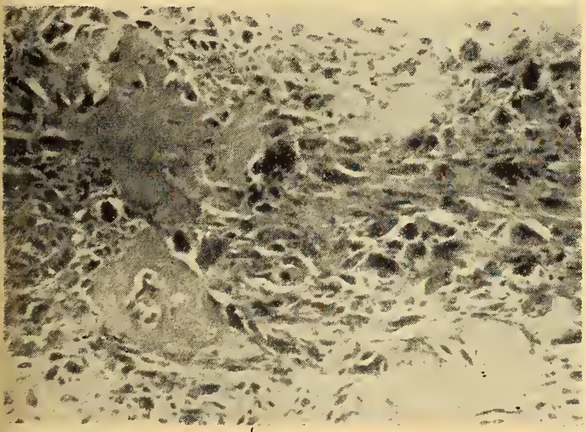

Fig. 2. Osteoid sarcoma of breast, showing osteoid tissue and pleomorphic cells. (40X).

The smaller tumor presented much hyalin connective tissue with relatively few blood vessels. The tumor cells, in the form of small islands and cords, were scattered throughout, infiltrating the dense stroma and somewhat compressed by it. Here and there they were present as larger accumulations, where they demonstrated a definite tendency to form alveoli. These cells were quite uniform in size and cuboid in shape when formed into acini, with scant cytoplasm and small nuclei, the latter having their chromatin in the form of fine threads. Mitotic figures were scarce. This lesion was identified as an adenocarcinoma of low grade malignancy (fig. 3).

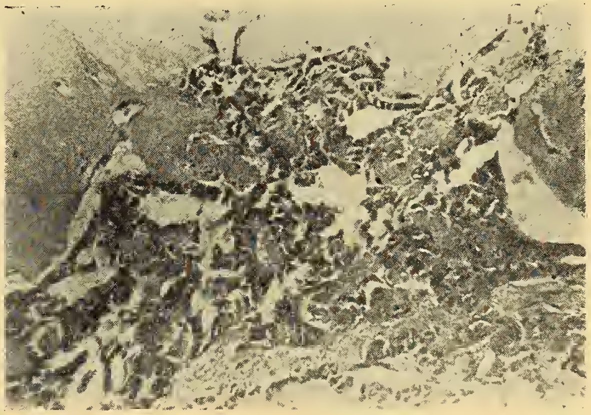

Fig. 3. Adenocarcinoma, a tumor separate and distinct from the sarcoma. (40X).

The remainder of the breast tissue showed increased fibrosis with slight cystic dilatation of some of the ducts, but otherwise nothing of note.

COMMENT

The small but typical adenocarcinoma

arising separately and distinct from the larger mesothelial growth raises again the old question of the existence of a "neoplastic diathesis." Needless to say, this one case proves nothing. But when taken in conjunction with the many other instances of multiple new-growths, and the enormous numbers of family histories of malignancy, it adds, in my opinion, just so much more weight to the affirmative.

The osteoid sarcoma, also called giant cell tumor of the breast, is indistinguishable histologically, in sections stained by hematoxylin and eosin, from osteosarcoma of bone.

Rottino and Howley[1] recently reviewed a selected series of 25 cases of osteoid sarcoma of the breast and found the following: The disease is rather rare, occurs usually in females in the sixth and seventh decades, and seldom causes pain. The time between the discovery of the swelling and that of seeking medical aid varied from three weeks to thirty years. Those tumors with the longer histories exhibited irregular episodes of more or less rapid growth; the others usually grew progressively and quickly. The mass was usually recorded as being firm and movable, but became, as it increased in size, fixed and soft or even fluctuant. In some cases it ulcerated through the skin in the latter stages of the disease. These growths were described as ranging in size from that of a "pigeon egg" to that of an "adult's head." Enlargement of the axillary lymph nodes was rarely observed. Various forms of surgery, roentgen therapy and combinations of both have been uniformly unsuccessful in the management of this disease. Following extirpation, local recurrence was seen early and death with pulmonary metastasis usually took place within the year.

Of extreme interest in the study of this tumor is the simultaneous occurrence of a fibro-adenoma as part of, or adjacent to it. This intimate relationship has been demonstrated in about 40 per cent of the cases reviewed by Rottino and Howley, who quote Stilling as suggesting, as far back as 1881, that the malignant tumor arose by metaplasia and malignant change from the stroma of the benign. It should be noted, however, that in the description of nearly all of these fibro-adenomata some mention was made regarding abnormalities in their stroma. Giant cells were found, or osteoid tissue noted, or "sarcomatous stroma" was mentioned, thus casting suspicion on the benignancy of these tumors. Were they not more adeno-sarcomata than adeno-fibromata?

However, the concept which seems to be most generally held at the present time is that not only osteid sarcoma, but all true sarcomata of the breast, whether they contain bone, osteoid or myxomatous tissue, cartilage or giant cells, or are made up simply of spindle or round undifferentiated cells, arise by metaplasia and malignant change from the stroma of an adeno-fibroma.

While it will be recalled that some of the symptoms and signs presented by the case under discussion strongly suggested a benign tumor, no gross or histologic evidence of a fibro-adenoma was found anywhere in the breast. Failure to demonstrate this neoplasm could well be accidental, however; for it could have been replaced entirely by the malignant growth, or the small remnants of it missed in the gross and microscopic examination, as has been found to have been the case in other reports.

It must be pointed out that many highly anaplastic epithelial tumors of the breast present a histologic picture not unlike that found in the present case. In 1919 Jessup, quoted by Rottino and Howley, reported a case of osteoid sarcoma of the breast, which Ewing thought to be an atypical giant cell carcinoma. But later, this authority[2], while still recognizing such a tumor as an entity which occurs with relative frequency, and which is often mistaken for a mesothelial neoplasm, also described "pure sarcomas of the breast" that exhibited spindle and giant cells, bone and cartilage formation. The larger tumor in this case should be, in my opinion, classified in this last group.

CONCLUSION

A case in which there occurred simultaneously and in the same breast, an osteoid sarcoma and an adenocarcinoma of low grade malignancy is reported. The possibility of a "neoplastic diathesis" is suggested, and the origin and nature of osteoid sarcoma of the breast is discussed.

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RESUSCITATION OF THE ASPHYXIATED BABY DELIVERED BY CESAREAN SECTION

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NEW ORLEANS

A review of neonatal mortality indicates that babies delivered by cesarean section have a death rate that does not conform with the popular view of the safety of cesarean section. This obstetrical technic has been advanced as a certain way to have a living child. The statistics do not bear this out. When all technics are considered, 2.5 to 3.0 per cent is the standard neonatal mortality. In cesarean section, in general hospitals, the rate is 8 to 10 per cent. In the best obstetrical hospitals the rate is 5 to 6 per cent.

The causes of these deaths are attributed to asphyxia neonatorum, aspiration pneumonia (or atelectasis) and cerebral hemorrhage. The first is a vague undefined term and is frequently used when no autopsy has been performed. Asphyxia and cyanosis are the outstanding symptoms of all three. A review of the causes of asphyxia and how it may be overcome is therefore indicated.

CAUSES OF ASPHPXIA

In the baby delivered through the usual birth channel, there are a number of stresses, strains and pressures, which undoubtedly act as stimuli to cause the initiation of respiration. It has been well known for some years now that the baby takes what might be termed "respiratory movements" as early as the fourth month of gestation. What then causes the change from a respiratory movement of once every three or four minutes to a regular rhythmic respiration, ranging from 40 to 60 per minute? It has been advanced that the pressure on the head, the elongation of the head, the squeezing action upon the chest wall, act as definite stimuli. Further it has been advanced that the sudden change in temperature from body temperature to room temperature acts as a stimulant. All of these undoubtedly contribute to the initiation of respiration. But certainly there is something more, some hidden factor which has not been discovered. In the baby delivered by cesarean section, these stresses, strains and pressures are entirely absent, and this baby does not breathe as quickly and completely or as rhythmically as does the baby delivered from below. Furthermore where routine intratracheal catheterization is performed on the baby delivered by cesarean section, from 3 to 7 c.c. of thick mucoid material, containing mucus, amniotic fluid, blood and sometimes lanugo may be aspirated from the upper respiratory tract and trachea. In the baby delivered from below, routine intratracheal catheterization rarely obtains any of this material. It is quite certain then that the material exists in the upper respiratory passage, which could potentially produce an aspiration atelectasis. Some other causes of asphyxia may be enumerated as follows:

(1). Too frequently the cord is severed as soon as possible. In this case the baby has been deprived of 80 to 200 c.c. of blood, which may comprise anywhere from 15 to 35 per cent of its total blood supply.

(2). Sometimes a condition exists in the mother which tends to produce an asphyxia of the child. These may be enumerated as kidney disease, heart disease, chronic respiratory illnesses, profound anemia, diabetes mellitus, toxemia and premature delivery. Any one of the above conditions added to the already existing tendency for a cesarean section baby to have asphyxia is enough to produce a severe asphyxia in the newborn baby.

(3). The presence of the usually necessary deep surgical anesthesia, added to the other factors already existing to produce a severe asphyxia, is merely an added factor, and usually can be overcome easily. It is seldom that analgesics are given prior to the operation, eliminating them as a factor to be considered in the asphyxia of the newborn. In many cases babies are delivered when the anesthetic used is either local or spinal anesthetic. Under such conditions these babies do have a tendency to breathe faster than the baby delivered under a gas anesthetic, but much more slowly than if they were delivered from below.

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(4). Sometimes a mother has been in labor for some hours prior to the operation itself. In such cases the baby has been subjected to a pounding of the head, and some intracranial damage may have occurred.

RESUSCITATION

It seems most advisable that someone versed in the art of resuscitation should be at hand whenever a cesarean section is performed. When the baby has been delivered it is extremely necessary and profitable to let the cord pulsate for a few minutes and then be stripped towards the baby before it be severed. When this has been accomplished, the baby should be received into a warm blanket, immediately put upon a flat table and without further ado, an intratracheal catheter should be used to aspirate the nose, the mouth, under the gums, the cheeks, and the posterior nasopharynx, and then the trachea should be entered. Aspiration of the upper respiratory tract and trachea should be done gently first; after this has been accomplished, then by means of the resuscitator's own breath, the baby's lungs should be inflated. Inflate gently. As soon as this has been accomplished, if the resuscitator will stop, the lungs will collapse of their own elastic recoil. This method should be repeated as often as 24 times to 30 times per minute, producing an oxygenation of the blood stream. As soon as the baby has taken one or two spontaneous breaths, the intratracheal catheter should be removed, and the baby given pure oxygen by face mask. This should be given from two to five minutes until the baby is breathing rhythmically, the color has turned from a slate gray cyanosis to a healthy pink, and the baby has shown a tendency to want to cry or has begun to cry. The usual methods of identification, silver nitrate in the eyes and so on, are then carried out and the baby quickly removed to a nursery as soon as possible. The aftercare of such a baby is of importance. Every cesarean section baby who has shown any severe asphyxia and has taken longer than five minutes to initiate respiration should be given routine oxygen by tent for at least 12 hours. All of these babies should be watched closely as some of them have definite tendencies to return to a state of cyanosis. Frequent aspirations of the upper respiratory tract should be done.

RESULTS

The above method of resuscitation is an extremely simple one. The presence of a resuscitator at all cesarean sections has proved to be most valuable. In 317 cases performed personally at Touro Infirmary, the following results were noted: six neonatal deaths occurred before 24 hours had elapsed. Of these six deaths, five were autopsied, and found to have massive cerebral hemorrhages. One was found to have a true congenital atelectasis of the newborn. At the same time, 137 sections were observed at which no routine intratracheal catheterization of the baby was performed. Of these 137 sections there were 12 deaths. Of the 12 deaths, 11 were autopsied. The one which was not autopsied was diagnosed to be congenital atelectasis of the newborn. Of the 11 babies autopsied, two died from cerebral hemorrhage, and nine died from aspiration pneumonia. In the lungs of the latter, the major findings were that many alveoli had been opened, but were blocked with a lining membrane of lanugo, blood, meconium and amniotic fluid, a striking similarity to the type of material found in the upper respiratory passages in all cesarean section babies.

It is noted that in the first series the death rate is 1.8 per cent; in the latter cases it is 8.7 per cent. This is far too striking a difference to be disregarded. It certainly should show that the majority of deaths occurring in cesarean section babies can be easily prevented by the use of a intratracheal catheter in the hands of someone who knows how to use it at the time of delivery.

CONCLUSION

The causes of asphyxia of the newborn delivered by cesarean section, the methods of resuscitation and results have been reviewed. It is emphasized that it is necessary to have someone present at cesarean sections for proper resuscitation of the baby in order to reduce the death rate of babies delivered by this method to a truly irreducible figure.

DISCUSSION

Dr. R. V. Platou (New Orleans): Dr. Russ' plea for routine intratracheal catheterization is certainly justified and amply verified by his striking experience in the Touro Infirmary service. Certainly the procedure is justified in all infants who have any direct or remote evidence of aspiration after birth. It is undoubtedly, from the experiences given us, justified as a routine procedure in all infants born by cesarean section because asphyxia is more apt to be encountered in this situation.

Dr. Russ has a number of critics here and elsewhere who maintain that routine intratracheal resuscitation or routine intratracheal aspiration as a part of the process of resuscitation, is not necessary in all cases. I am sure Dr. Russ would agree with these critics that the vast majority of the infants would survive whether or not this integral part of the procedure were followed. We are most concerned with saving that last percentage who can be saved by refinements dictated by modern knowledge of causes of death in newborn and prematurely born infants.

Dr. Walter Levy (New Orleans): I think as an obstetrician that it should be emphasized, and I think all doctors doing obstetrics will agree, that we do feel much safer in going into the operating room when a man capable of doing aspiration of the trachea of the newborn is present. It it quite distressing to operate and not hear the baby cry. The delay of the first cry affects the central nervous system in the long run. Some cesarean babies, whether local or general anesthesia is used, do not start to cry immediately. It is not always the anesthesia; something just does not set off the mechanism of respiration of the baby. We very casually promise a live baby with cesarean section and sometimes our faces are red when the baby dies. That last per cent we should and must cut down and I think a pediatrician should always be part of our crew in the operating room for a cesarean.

SUMMARIZED REVIEW OF THE NEW ORLEANS CHARITY HOSPITAL SURGICAL DEATHS FROM JULY 1, 1943 TO JULY 1, 1944

FRANK L. LORIA, M. D.
NEW ORLEANS

Among the several duties of a hospital staff chairman should be a general review and study of all the fatal cases in his group. These deaths should be properly classified, and the composite statistical tabulations made should be presented to the staff for its analysis and critical consideration.

During the year 1944 the writer served as chairman of the Section on General Surgery of the New Orleans Charity Hospital's Surgical Staff. In accordance with the belief above expressed the record of each fatal case was reviewed, and the important and necessary imformation tabulated. This study was presented to the Section on General Surgery at the December 1944 meeting, at which time the new officers for the ensuing year were also elected.

Until four years ago all of the hospital's surgical specialties met monthly—except during the summer—as one body. This body was known as the Surgical Staff or the hospital's Surgical Division. Since the beginning of the war the Surgical Division, as such, met only twice during the year; and the specialty groups met every month except during the two months in which the Surgical Division met as a whole. At the end of the war the Surgical Division reverted to the pre-war plan of holding meetings.

Since the hospital year, during normal times, begins on July first of each year, I felt that all fatal cases from July 1, 1943 to July 1,1944 should be included in this review. The study was presented to the hospital's Section on General Surgery with the hope that a free discussion would lead to constructive comments. This in turn will improve the already excellent services given surgical cases in this institution.

During the period of time considered exactly 400 deaths occurred in the wards comprising General Surgery. In the same period 5,950 patients were admitted to these services. According to these figures the mortality rate on General Surgery was 6.72 per cent. Parenthetically, it should be noted that 42,852 patients were admitted to the institution during the same period of time. Among these there occurred 2502 deaths. Hence, the hospital's gross mortality rate for the same period was 5.83 per cent.

Among the 400 patients dying on the General Surgical services were 15 in whom death was due to non-surgical conditions. However, these patients had been admitted with surgical conditions, and before anything could be done for them died of some coincidental medical condition. Exclusion of these 15 cases would lower the mortality rate on these services to 5.6 per cent. A previous similar study by me, published in 1930, showed a gross mortality rate of 6.26 per cent.

Perhaps 95 per cent of all victims of serious injuries in New Orleans and the nearby surrounding territory are rushed to this hospital for treatment. Frequently, too, many patients treated in the homes are rushed to Charity Hospital when death seems imminent. Because of these facts one wonders why the mortality rate in the surgical services in this hospital is not even greater.

CAUSES OF DEATH

Study of the most common causes of death in this series showed that five groups accounted for 286 or 71.5 per cent of these fatalities. Among these five groups accidents (including homicides and suicides) accounted for 117 deaths; carcinoma (not including those causing intestinal obstruction) 80 deaths, intestinal obstruction 35 deaths, abscesses 30 deaths and gangrene 24 deaths.

A second group, consisting of ruptured peptic ulcers, appendicitis, tetanus, and brain tumors accounted for 44 deaths or 11 per cent of the fatal cases. Hence, the nine groups of cases causing 330 of the 400 deaths accounted for 82.5 per cent of all the deaths in this series.

Further analysis shows that accidents caused 29.25 per cent of these deaths and that carcinoma accounted for 20 per cent. Hence these two conditions alone accounted for nearly 50 per cent of all these fatalities. If the six cases of malignancy causing intestinal obstruction are included these two conditions would account for 50.75 per cent of the deaths.

Attention should be called to the fact that among the "carcinoma group" 41 cases, more than 50 per cent, involved the esophagus, pancreas and duodenum. The entire large bowel, including the rectum, was involved in 18 cases. The six fatal cases of carcinoma of the breast is a surprisingly small number in an institution of this size.

Among the entire group of fatalities four were declared "anesthetic deaths." In two of these spinal was used. A third was given ethylene and ether. It was not possible to learn the type of anesthetic used in the fourth case.

Of much interest is the unusually small number of patients dying from appendicitis. In only one of these 10 instances was the diagnosis of chronic appendicitis made. The others were patients with acute appendicitis, several of whom showed perforation. It is of interest to note that there were more deaths from perforated peptic ulcers (14) than from appendicitis.

This institution has almost invariably shown an appreciable number of deaths from tetanus each year. The ten cases herein given are not unusual.

Up to the present time it has not been possible to obtain the necessary figures which would permit computing the mortality rate in each of the following given causes of death. Publishing the results of the present study has been postponed because of waiting for the figures indicating the total admissions in each of the conditions named.

Causes of Death	Number of Cases	Total Number of Cases
Abscesses		30
Brain	6	
Buttocks	1	
Liver	6	
Lung	5	
Perinephritic	1	
Perirectal	2	
Peritonsillar	1	
Periurethral	1	

Causes of Death	Number of Cases	Total Number of Cases
Retropharyngeal	1	
Spleen	1	
Subphrenic	2	
Thigh	1	
Tubo-ovarian	2	
Accidents-Homicides-Suicides		117
Burns	30	
Chest (crush injuries)	5	
Crush injuries (entire body)	4	
Crush injuries (extremities)	2	
Fractures of vertebral column	4	
Gunshot wounds		
Abdomen	9	
Back	3	
Chest	2	
Head	6	
Neck	1	
Head injuries	39	
Rupture of intestines	3	
Stab wounds		
Abdomen	2	
Back	1	
Chest	4	
Face	1	
Stricture of esophagus (lye ingestion)	1	
Acute urinary retention		1
Adenoiditis		1
Anesthetic deaths		4
Aneurysms		4
Appendicitis		10
Ascending myelitis		1
Arteriosclerotic heart disease		1
Beriberi		1
Brain tumors		10
Carcinoma		80
Bladder	1	
Breast	6	
Colon (cecum)	3	
Colon (descending)	2	
Colon (sigmoid)	3	
Colon (transverse)	1	
Common bile duct	1	
Esophagus	10	
Larynx	2	
Lung	3	
Pancreas	13	
Pharynx	1	
Recto-sigmoid	2	
Rectum	7	
Skin	3	
Stomach	18	
Tongue	1	
Unknown source	3	
Cholecystitis		5
Embolism		5
Empyema		3
Esophageal stricture		1
Fecal fistula		1
Gangrene		24
Arteriosclerotic	15	
Diabetic	5	
Gas bacillus infection	4	
Gastric diverticulum		1
Gastric polyposis		1
Goiter		5
Hemorrhoids		1
Hernia		5
Hydrocephalus		4
Intestinal diverticulosis		1
Intestinal obstruction (due to)		35
Adhesions	7	
Imperforate anus (congenital)	1	
Intussusception	2	
Mesenteric thrombosis	2	
Neoplasm	6	
Strangulated hernias		
Femoral	1	
Incisional	1	
Inguinal	3	
Umbilical	1	
Surgical procedure	1	
Volvulus	4	
Unknown cause	6	
Jaundice		3
Leiomyomata of uterus		1
Lymphogranuloma inguinale		1
Myocarditis		1
Osteomyelitis		1
Peptic ulcer (ruptured)		14
Pericarditis		3
Peritonitis (primary)		1
Peritonitis (tuberculous)		1
Parotitis (tuberculous)		1
Rectal stricture		2
Sarcomata		3
Spinal cord tumors		1
Tetaus		10
No given cause of death		5

COMPLICATIONS

The most difficult part of the present survey was the study of the complications in these fatal cases. Frequently several complications were enumerated and no effort whatsoever made to designate the most important one. On several occasions the individual record had to be studied carefully to find out which of the several complications given most likely contributed to the fatal outcome of the case. On occasions this was most difficult. In other instances it was very obvious that complications played an important role in the outcome of these cases. Nevertheless, none was given. The records show room for considerable improvement along these lines. Despite the several handicaps an effort was made to determine the most important complication in each of these 400 fatal cases.

As the table of complications is checked one notices the usual conditions that so frequently cause death in the average surgical fatality. Hence, bronchopneumonia, generalized peritonitis, septicemia and toxemia, and hemorrhage and shock still retain their importance in this respect. The devasting effects of generalized metastases in cases of malignancy are of course not unexpected. Certainly among surgical patients in general these five complications, along with thrombosis and embolism, comprise a very important group. Noteworthy is the fact that in 92 of these records it was impossible to determine a complication sufficiently important to say it contributed to the death of the patient.

MOST IMPORTANT COMPLICATIONS AMONG THESE 400 DEATHS

Complications	Number of Cases	Incidence per cent
Bronchopneumonia	50	12.50
Diabetes	11	2.75
Generalized peritonitis	49	12.25
Septicemia and toxemia	53	13.25
Meningitis	3	0.75
Hemorrage and shock	77	19.25
Generalized metastases	41	10.25
Malnutrition	24	6.00
No complications given	92	23.00

AUTOPSIES

Among the 400 surgical deaths herein considered 114, or 28.5 per cent, were autopsied at the hospital. An additional 108 cases were declared "Coroner's cases", and the diagnosis in each of these was furnished by the Orleans Parish Coroner. Whether or not complete autopsies were performed on these has not been determined.

GROSS AUTOPSY RECORDS

Total number of deaths on surgical wards	400
Hospital autopsies	114—28.5%
Diagnoses given by coroner's office	108

CONCLUSIONS

1. As Chairman of the Section on General Surgery of the Charity Hospital's Surgical Division during 1944, I studied and grouped appropriately, all deaths occurring in the hospital's general surgical services.

2. The study was presented to (a) the hospital's Surgical Division, and (b) the Section on General Surgery, for their review and critical consideration.

3. Accidents, homicides and suicides were responsible for 29.25 per cent of all deaths in the surgical services. Cancer, accounting for at least 20 per cent of the fatalities, was next in importance. Intestinal obstruction, accounting for 8.75 per cent of the deaths ranked third; and infections (abscesses) fourth (7.5 per cent). It is important and interesting to note that these four conditions accounted for approximately two-thirds of the fatalities in the Charity Hospital's general surgical services during the period considered.

4. Appendicitis was responsible for a surprisingly small number of deaths. The number of perforated peptic ulcer deaths is considered to be unusually large.

5. Tetanus continues to be a very important problem. No case of tetanus occurring on the other services, such as obstetrics and gynecology, is listed in this group.

6. Study of the complications in this series of deaths was rather unsatisfactory. Nevertheless, the usual group of complicating conditions in surgical cases is evident. Cases of thrombophlebitis and phlebothrombosis, and pulmonary embolism, were few.

7. Of these 400 fatalities 114, or 28.5 per cent, were autopsied in the hospital. A coroner's diagnosis was given in 108 additional cases.

THE PRESENT STATUS OF THE USE OF TETANUS TOXOID

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INTRODUCTION

Can clinical tetanus be prevented? This question as raised by many today will probably be answered following the reports that should be released by the medical world after the use of tetanus toxoid in World War II. Just as we have seen the rapid use of the wonder drug "penicillin" and its miraculous results in the war that has just ended, I believe the use of tetanus toxoid in the prevention of tetanus in civilian life will be the number one prophylatic agent in saving lives.

The importance of tetanus in civil life may be small. In warfare, however, the conditions which minimize the importance of tetanus in civil populations are completely reversed, and high incidence of tetanus, with its great mortality rate, becomes a major medical problem. In civil life, wounds are few, often superficial and uncontaminated, and antitoxin is quickly available. War wounds, on the other hand, are notably deep, with much devitalized tissue and soil contamination, and serum is often not promptly available.

It will be noted that the incidence of tetanus has varied considerably according to the type of war and the soil pollution in the theater of war. Prior to World War I, in those who contracted tetanus the mortality rate was close to 90 per cent. In the German army during 1914, when troop movements were rapid and lines not stabilized, the incidence was high and the mortality reminiscent of the Franco-Prussian war. When lines were stabilized and medical service prompt and efficient, the incidence of tetanus dropped to 0.8 per 1000 in the German forces, and 0.2 per 1000 in the United States troops, with case mortality in the United States cases as low as 11.1 per cent.

In view of the results to be anticipated from active immunization against tetanus, namely, that the general use of this method would definitely prevent almost every case of tetanus, even the low rate for tetanus prevailing in the closing years of World War I was too high.

Delay in antitoxin administration would certainly cause increased tetanus in active warfare. Such delay is favored by the speed and range of air and surface craft, the use of small groups of men in landing forces, and by the trend in aviation and in ground mechanization of troops, all of which are factors tending toward wide range of action and consequent remoteness from base medical attention.

Before taking up the subject of the use of tetanus toxoid, I would like to present the review of tetanus cases at the Charity Hospital of Louisiana from the year 1936 to 1944 inclusive. The policy at this hospital is to give to every patient seen in the accident room a prophylactic dose of antitoxin, and the cases presented here are actual cases of clinical tetanus diagnosed on admission, and as would be seen later, only three cases of clinical tetanus developed following the use of antitoxin as a prophylactic measure.

The total cases were 289 with about two or three cases that I thought were not clear-cut tetanus cases. The over-all mortality in this series was 47.4 per cent, although all patients received the best in medical care. Some were in such poor condition that treatment was useless. Males were more affected than females, ratio of 184 to 105; race, 182 colored to 107 white.

The three cases reported that received a prophylactic dose before the actual symptoms of tetanus developed are a small per cent when one considers the total number of patients seen at this hospital during the past 10 years.

HISTORY

In 1924, Descomby produced tetanus toxoid by the application of the technic of Ramon which he described for the removal of the toxic properties from diphtheria toxin. Later, Ramon and Zoller, having demonstrated its antigenic value, suggested the use of tetanus toxoid as an agent for active immunization against tetanus. Since that time, the value of this procedure has been demonstrated by many workers, and active immunization with tetanus toxoid has largely supplanted passive protection with antitoxin for the prevention of tetanus among battle casualties. Reports from the British and French armies have indicated its efficiency under actual battle conditions, as has the experience of our own troops in combat zones.

PREPARATION OF TOXOID

In preparing this toxoid, the broth that was used was a veal infusion base with 1.5 per cent Witte's peptone added. With this medium the potency of the toxin obtained varied between 20,000 and 150,000 m.l.d. (guinea pig) per ml. Detoxification was carried out with formalin and storage at 37° C., and this was called toxoid A. This toxoid was used to compare the antitoxin response to two doses and to three doses. Experience with this toxoid, used under field conditions, showed that reactions of an anaphylactic character were reported by a few authors.

On this account, the Witte's peptone was discontinued in 1940 and hog stomach autolysate plus veal infusion was substituted; call this toxoid, toxoid B. Later the medium used for the production of toxin was one adopted by E. M. Taylor, one-half veal infusion and one-half hog stomach autolysate treated with calcium chloride in order to reduce the iron content to a fixed level. A small amount of nicotinic acid was added, and pH set at about 7.0.

The strain of *Clostridium tetani* used throughout for the production of toxin was obtained in 1929 from the New York State Health Department. Incubation was carried out at between 35° and 36° C. for 10 to 11 days.

Many toxoids containing less than 30,000 m.l.d. per ml. were discarded. Toxoid C, was the toxoid combined with typhoid, para A, and para B vaccine. Up to the present time, no reactions have been reported following the use of toxoids C or B. The antigenicity of the toxoid was tested either by the method of flocculations, antitoxin response in guinea pigs, or combining power, or a combination of these methods.

Comparison of the antitoxin response to two and three doses of tetanus toxoid was tried on two groups of volunteers using toxoid A. Those taking the two dose test had an interval of six weeks between doses, while those taking the three dose test waited four weeks between the first and second dose, and two weeks between the second and third dose. Blood samples were obtained 70 days after the final dose in each group, and the antitoxin titrations of the serum were carried out at various levels in mice. The results showed that 82 per cent of the two dose group, and 92 per cent of the three dose group had at least 0.01 unit of antitoxin per c. c. of serum. On the basis of this comparison, the three doses of toxoid were recommended to be given in elapsed time of six weeks.

These two groups above mentioned were also used to test the antitoxin response to a recall dose. These two groups received 0.1 ml. of toxoid A 70 days after the last dose had been given, and nine days elapsed before the response in antitoxin was measured. Eighty-five per cent of the group showed an increase in antitoxin following the small second stimulus of 0.1 ml.

Following the above published report, Ramon advocated the use of T.A.B.T. which was a combination of tetanus with the usual typhoid vaccine. This combination was used in three doses, given at intervals of three weeks between doses. Ninety-five per cent of the persons had at least 0.02 unit of antitoxin. Response to a recall dose in this group using T.A.B.T. one year after the primary course of inoculations, 74 per cent showed an increase in titer following 0.5 m. T.A.B.T. Those patients having a high antitoxin value before this recall dose gave a yet higher antitoxin response.

In 1941, procedure for active immunization against tetanus of American personnel on active duty was ordered. The agent selected was the plain or fluid tetanus toxoid. The United States Army required the original toxin must have a potency of at least 10,000 guinea pig m.l.d. per ml., and be detoxified by the addition of not more than 0.4 per cent of formalin. The toxoid so produced must be shown to be completely atoxic for guinea pigs when injected subcutaneously in doses of 5 ml. The retention of specific antigenicity is demonstrated by the subcutaneous injections of 1 ml. of the toxoid into each of a group of guinea pigs. At least 80 per cent of the animals so prepared must show complete protection against 10 m.l.d. of toxin administered six weeks later.

Decision to use fluid rather than alum-precipitated toxoid was based on the satisfactory experience of the British and French with the use of a fluid preparation. The relative infrequency of reactions attending the administration of this form of toxoid and the evidence at hand attesting to its efficacy were thought to constitute a sound basis for its adoption. While considering the alum-precipitated toxoid, its antigenic properties were well appreciated, but this form of precipitate was limited in experience to alum-diphtheria toxoid in children. This lack of experience with precipitated toxoids in adults, and the knowledge that the addition of alum to an antigen in many instances tends to increase its sensitizing action, were additional factors influencing the choice of the type of toxoid.

The use of toxoid for the development of adequate protection against tetanus involves the establishment of a basic active immunity and the subsequent reinforcement of this immunity by the administration of a stimulating or booster dose. Such a procedure is currently followed in the Army.

ARMY'S METHOD OF IMMUNIZATION

Three subcutaneous injections of tetanus toxoid of 1 ml. each are given three weeks apart to each man in the service. A booster dose of 1 ml. is given at end of one year after the initial series. As an added safeguard if the enlisted man leaves for overseas duty, a stimulating dose of 1 ml. is administered during the month prior to departure, unless such departure is within the six months' period subsequent to the administration of a previous dose. If one is injured, an emergency stimulating dose of toxoid is given. Antitoxin is not administered for prophylaxis unless there is reason to doubt that the individual in question had previously received at least the initial series of toxoid injections. If such a doubt does exist, a prophylactic dose of tetanus antitoxin is administered and active immunization with toxoid is initiated at the same time.

DURATION OF PASSIVE TETANUS IMMUNITY

Passive immunization with tetanus antitoxin is generally believed to be of short duration. Zinsser states that "In ordinary human cases, the antitoxin injected into man may be expected to disappear from the circulation within about three weeks."

Bigler and Wernier carried out antitoxin titrations on the blood of 64 children, aged three to ten years at various times after the injection of 1,500 units of tetanus antitoxin. Large amounts of variation in antitoxin titers were found. About the third week the tendency was for the level to fall to 0.01 unit, although some remained as high as 0.1 unit and others fell to 0.003 unit or less. This study showed that with small doses of antitoxin, passive immunity is of short duration. When large doses of antitoxin are given, the early high titers fall within a short period, but lower levels of antitoxin may persist in the blood for a much longer time.

The actual level of antitoxin in the blood required to produce clinical immunity to tetanus has not been definitely established, but there is conclusive evidence that higher values are necessary in passively immunized animals than in those actively immunized. Many believe today that in human beings clinical protection from tetanus requires a titer of 0.01 to 0.1 unit of passively introduced antitoxin while an active immunity of 0.001 to 0.01 unit is sufficient.

After the injections of 10,000 to 150,000 units the tendency is for tetanus antitoxin to persist in the blood in a titer of 0.1 unit four to eight weeks and 0.01 unit to remain for eight to ten weeks.

THE ABSENCE OF ANY ANTITOXIN STIMULATION BY AN ATTACK OF CLINICAL TETANUS

Tetanus infection does not produce a permanent antitoxic immunity, since a demonstrable antitoxin does not persist in the blood after recovery. This is explained in that tetanus toxin is so potent that the absorption of an amount sufficient to produce clinical symptoms is too minute a quantity of antigen to stimulate the production of antitoxin. However, it might be possible for sufficient antigen to be absorbed to produce a primary antigenic stimulus such as occurs after an initial dose of toxoid and which sensitizes the cells to a later, more effective secondary stimulus. Four such cases were studied and none showed any development of tetanus antitoxin when toxoid was given some time after recovery.

IMMUNITY TO TETANUS INDUCED BY A THIRD DOSE OF TOXOID, TWO YEARS AFTER BASIC IMMUNIZATION

Two years after the completion of basic immunization with two 0.5 c. c. doses of combined alum-precipitated diphtheria and tetanus toxoids, 31 allergic children were given a third, or "booster" dose of 0.5 c. c. (18 received combined alum-precipitated toxoids and 13 alum-precipitated tetanus toxoid alum).

Comparison of the initial antitoxin levels and the corresponding titers one month and two years after administration of the "booster" dose of toxoid for one group of children two years after basic immunization and for another group from three to 15 months after immunization and for a final group given basic immunization only revealed that the per cent of the first group of children attaining the highest antitoxin levels of 0.5 to 1 unit or more of antitoxin within one month of receiving their last dose was not only significantly higher than those of the children of the last two groups (100 as compared with 70 and 32 per cent, respectively) but that two years later the ratio between the patients of the three groups who showed an antitoxin titer of 0.1 unit or more was 4:1 (72 and 18 per cent, respectively) for the children of the first and the second groups and 8:1 (72 and 9 per cent respectively) for the children of the first and the third group.[10]

IMMUNITY INDUCED BY A THIRD DOSE OF TOXOID THREE YEARS AFTER BASIC IMMUNIZATION

During the present emergency the subject of active immunization against tetanus commands special attention. Of particular importance is the degree of immunity induced by the stimulating, or "booster" dose of tetanus toxoid in relation to the interval between basic immunization and the administration of the "booster" dose.

Peshkin has shown that the initial tests made within two months after the "booster" dose showed the antitoxin value to be higher after the third dose than after the second. Tests performed one year later revealed not only that the drop of the titer was retarded after the third dose, but that the antitoxin values were distinctly higher (a ratio of 14.5 to 1 or an average antitoxin titer of 0.641 unit as compared with 0.044 unit).

The booster dose injection showed that the titer was always higher and lasted for a much longer period than that which followed basic immunization as well as that which followed a "booster" dose of combined toxoids given three months to two years after basic immunization. The antitoxin titer obtained on the seventh day after the administration of a "booster" dose of toxoid given three years after basic immunization was always adequate and it was at its maximum at this time in the majority of instances.

ACTIVE IMMUNIZATION OF HUMAN BEINGS WITH COMBINED CLOSTRIDIUM PERFRINGENS AND TETANUS TOXOIDS

By using concentrated *Cl. perfringens* toxoid suspended in plain tetanus toxoid combined immunization as evidenced by antitoxin titrations, has been demonstrated both in guinea pigs and in human beings. The antitoxin response to tetanus toxoid is greater when the toxoid is given in combination with *Cl. perfringens toxoid* than when it is given alone.

According to previous work, guinea pigs so immunized show ability to withstand large doses of a living culture of *Cl. perfringens* inoculated intramuscularly. On the basis of analogy there is reason to believe that the same might be the case in human beings in whom chance infection probably does not involve many spores.

PLAIN FLUID TOXOID VERSUS ALUM-PRECIPITATED TOXOID

Study in the United States Navy was started in 1935 on the U.S.S. Relief, the fleet hospital ship, with plain formal toxoid and was completed on the same group in which alum-precipitated toxoid was used exclusively. This study showed: (a) that alum-precipitated toxoid was a much more efficient immunizing agent than plain toxoid, and (b) the longer the interval, up to eight weeks, between the injections (alum) the better were the results.

In 1937, another study was done at the United States Naval Academy and reported by Hayden and Hall. This test was carried out on football players and no individual failed to respond with an adequate blood level of antitoxin.

In 1938, 2300 men were injected using alum-precipitated tetanus toxoid. Reactions were at a minimum. Eight had sore arms, two had fever and malaise, and one had urticaria. In the second injection, eight weeks later, 1800 men were injected with toxoid A (already described in the beginning of the paper). One boy had an anaphylactic shock reaction, and the use of this toxoid was stopped and the remaining 500 were injected with another toxoid. No reactions were reported from these 500. Something definite in the toxoid A was producing this reaction. This was probably the Witte's peptone already taken up in this paper.

In 1939, the incoming class of 793 to the United States Naval Academy were injected and only one reaction was noted, a fever which may or may not have been due to the toxoid. No reactions were reported from the second injection.

During the period between 1934-1940, titration of serum-antitoxin was done in the United States Navy. Fifty-three men were given two injections of alum-precipitated tetanus toxoid, 0.5 c. c. each, eight weeks apart, as basic immunization. Fourteen weeks later 0.5 c. c. of A.P.T.T. was given, but blood was also drawn before the injection and one week afterward another titration was made.

What is the minimum antitoxin level necessary for protection against tetanus? Gold chose a level of 0.1 unit per c. c. as the level for protection. The Navy has shown in repeated cases that individuals with a serum-antitoxin level of only 0.01 unit per c. c. of serum respond rapidly with high blood antitoxin levels upon toxoid stimulation. The antigenicity of toxoid and toxin are the same.

Bergey, Brown, and Etris showed that circulating antitoxin does not measure the total protection, the tissue immunity being considerably greater. They also have demonstrated in animals that 0.01 unit antitoxin per c. c. is amply protective. W. T. Harrison of the National Institute of Health said "as far as I am aware, there are no figures available which will indicate the antitoxin level necessary to prevent tetanus. The most important factor, it seems to me, is the development of a situation within the body which will permit rapid formation of antitoxin should it become necessary."

It is better to over rather than underimmunize. The Navy's plan is after basic immunization with two injections of alum-precipitated tetanus toxoid, eight weeks apart, a man, when wounded, receives an injection of toxoid, and all patients regardless of injury, once having been immunized, receive an injection of toxoid every four years thereafter.

REACTIONS FOLLOWING TOXOID INJECTIONS

The usual occurrence is after the second injection. Reactions are usually spoken of as immediate, delayed, or late, depending upon their time of onset after the injection. Immediate reactions are those that occur within one hour after the injection; when severe, referred to as an anaphylactic shock or crisis. In severe shock there is loss of consciousness and possibly convulsions usually at times preceded by itching of the nose or body, or a tingling sensation. Immediate relief following injection with adrenalin has been reported. No deaths have been reported by toxoid injection in general.

Accelerated reactions usually occur from one to 24 hours after the injection.

Late reactions may occur from 24 hours to two weeks after injection with chills, fever, severe urticaria, edema, adenitis, joint pains, and gastrointestinal disturbances. In children negative skin tests are apparently the usual thing whether or not reactions occur. No relationship between pollen, contact, and food allergy and the reactions following toxoids has been decided upon as yet. From present known facts, there would seem to be little practical value in doing routine skin tests with toxoids and vaccine.

The advantages inherent in the active immunization with tetanus toxoid are that the serum antitoxin titer may be raised to a level higher than that afforded by the usual prophylactic dose of antitoxin (horse-serum), that it is more lasting, that it can be rapidly re-elevated by a toxoid injection in an emergency and, perhaps most important of all, that it avoids the very real dangers of reaction or sensitization incident to serum administration.

Cases of allergy following the second injection of alum-precipitated tetanus toxoid have responded well to an injection of epinephrine. Many believe a scratch test should always be made before the second and any later injections of the toxoid preparations, and for purposes of record and comparison it should be done before a first injection.

The test is done as follows, a drop of the toxoid that is to be injected should be placed on the abraded area, lightly rubbed in and allowed to remain 15 minutes. It is then wiped off, if no urticarial wheal or erythema appears, then the required injection may be made, but always with precautions. If there is a reaction, injection should be postponed and the test repeated in from four to six months.

Under all circumstances, with any dose, the patient must be kept under observation for at least half an hour, for any reaction of serious importance will begin within this time. The physician should always have close at hand a bottle of epinephrine diluted 1:1000, a sterile hypodermic syringe and a tourniquet (best to have adrenalin in syringe ready for injection). If there is any evidence of general reaction such as itching, general pruritus, erythema or urticaria, cough or a sense of pressure in the chest, the tourniquet should be tightly applied above the injection site and epinephrine should be administered in doses of from 0.5 to 1 c. c. and the procedure repeated as indicated. It is better to give the toxoid injection in the arm, as the tourniquet may be applied more effectively.

CONCLUSION

The war has given us proof of the potency of tetanus toxoid with surprising speed. The optional procedures to be used for adults in military service and for infants and children, however, are unsettled. Age and occupation certainly have an important bearing on the technic used.

Up to the present time, there have been no reported cases of tetanus following the completion of the basic active immunization with tetanus toxoid in the United States Armed Forces. The British have reported a few cases following the second injection of toxoid, but no cases have been seen following the completion of the immunization.

The future is very bright for the prevention of tetanus. Now the biggest problem is to carry to the public in the form of educational programs, posters, and so on, the value of active immunization against tetanus, and by instituting in the Public Health programs throughout the country active immunization so the clinical cases of tetanus can be prevented.

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THE AMERICAN MEDICAL ASSOCIATION'S PROGRAM FOR MEDICAL CARE

In the organization section of this number of the Journal, the program of the American Medical Association for the improvement of medical care is printed verbatim. This program has finally evolved after many months' study by the Council on Medical Service of the American Medical Association. It represents the answer of the American Medical Association and of organized medicine to the attempts that are being made by certain people to bring about the regimentation of the practice of medicine. It is earnestly to be hoped that all members of the State Medical Society will read this program and more particularly note that the previous fourteen point program has been clarified so it now consists of ten points. The members of the House of Delegates certainly should be thoroughly familiar with the program because Louisiana must not fall behind in an effort to back up the national organization in its efforts to by-pass some of the plans which are emanating from Washington for medical care of the lower income group.

It will not be possible to discuss in detail the national health program. Many of the ten points are without controversial features and are self-evident. On the other hand there are two or three aspects of the program which might not be entirely clear to a physician and particularly to a Louisiana physician. In point two, for example, the last sentence points out that the program for national health should include hospitalization for those who need it but are unable to pay, and for medical care to be provided by the physician of the patient's choice. The State of Louisiana is unique among the other states of the Union in that it has a program of state hospitalization the like of which is not to be found in any other state. For the medical indigent two very large state hospitals are provided in New Orleans and in Shreveport, and in Alexandria, Monroe, Lafayette and elsewhere there are smaller state hospitals. These hospitals are of such a size and necessarily are close to only a small number of practitioners so that it would be physically impossible to provide medical care by a physician of a patient's choice. If it be the intent of point two to use all hospitals in local situations, what would happen to our large state hospitals?

It should be noted in point five there is provision made for health and diagnostic centers. The Federal Government may aid in providing such centers but the community must maintain them. Are some of our poor towns and impoverished parishes able to maintain such institutions? How much help should the state provide for their maintenance? As a matter of fact are such facilities necessary for a large number of communities?

Point number seven is decidedly ambiguous. The provision for medical care of all veterans seems to run in direct conflict with the Veterans Administration and their present methods to give care to the veterans. Would this mean that the veterans hospitals would be abolished if point seven were accepted? Certainly there would be a tremendous amount of difficulty in putting over such a plan as outlined in this particular point. On the other hand the veterans who will not need hospitalization but out-patient or minor medical care can be given service most satisfactorily under this particular plan. The Veterans Administration has already entered into contracts with the Kansas State Medical Society, the Michigan State Medical Society, the Michigan Medical Service of Detroit, the California Physicians' Service of San Francisco and the Medical Service Administration of New Jersey to furnish medical service to veterans. It is not at all clear whether this medical service includes medical care over a long period of time or surgical care when major surgery is presented. The Kansas plan looks as if it were simply to take care of out-patient examinations and treatments, whereas the Michigan contract with the Veterans Administration looks as if service would be rendered for any type of disability service-incurred, or incurred after completion of service irrespective of its type, character or kind.

Many other features of the ten point program of the American Medical Association could be discussed here and will undoubtedly be discussed in the House of Delegates when it meets in Alexandria next May.

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NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

It is a real satisfaction to note that the New Orleans Graduate Medical Assembly will again present a program this year. Owing to the exigencies of war and travel situation, this very excellent organization had to suspend its activities for several years.

This year the ninth meeting will be held April 1-4. An excellent list of speakers in the various fields of medicine has been provided by the program committees. Sixteen distinguished speakers from all over the country from the Pacific Coast to the Atlantic Coast, from the Great Lakes to the Gulf of Mexico, will appear on the program. More specifically they include such men as Dr. William D. Stroud of Philadelphia whose book on diagnosis and treatment of cardiovascular diseases is well known. Dr. George T. Harrell, recently elected professor of medicine at the Bowman-Gray School of Medicine, Winston-Salem, will also talk on subjects of a medical nature. Dr. Russell L. Haden of Cleveland is the third of the medical representatives. In surgery there are two speakers: Col. J. B. Brown of the Valley Forge Hospital and Dr. Henry N. Harkins, associate professor of surgery at Johns Hopkins University. In pediatrics the head of the department of pediatrics at the University of Texas Medical School, Galveston, Dr. Arild E. Hansen, will represent this particular field. In gynecology Dr. G. C. Schauffler of Portland, Oregon, will speak on subjects which will be of interest to the general practitioner and not on the highly specialized features of his especial branch of medicine. Dr. Earl D. McBride of Oklahoma City will discuss the most recent advances in orthopedic surgery and Dr. James W. White of New York, in ophthalmology. These names represent samples of a few of the speakers who will present subjects in which they are authoritative. It can be seen that the speakers are recognized masters of their specialties. Intellectually and scientifically they will give the attendants at the meeting information which will be of tremendous value in the management of their patients.

We would urge the doctors of Louisiana to attend this important meeting. All of you have been submerged in the activities of your professional work in the last few war years, doing double, even triple duty. Here is an opportunity to refresh your knowledge of medicine and a splendid chance to learn what is going on in the present day world of medicine. Parenthetically it is well to remember that you physicians need a rest and a change. How better could you spend a few days than in combining such a change with the obtaining of scientific knowledge?

HEALTH OF LOUISIANA

New Orleans is the only city of Louisiana which is listed in major cities of the United States in the weekly mortality index published by the Bureau of the Census of the Department of Commerce. The summary of the deaths which took place in New Orleans in 1945 has just been made available. It is interesting to note that there were over 400 less deaths in the city than during the previous year. The total number of people dying in New Orleans was 7040. These deaths were distributed 4476 in the white population and 2564 in the colored. It is gratifying to find the number of deaths reduced in the city, particularly in view of the fact that there has been a considerable population increase in New Orleans.

The figures for the number of deaths in the whole State of Louisiana are not available; however, the figures for the reportable diseases for the year 1945 are at hand. As has been pointed out repeatedly, the venereal diseases are by far greater in number than all other reported diseases. Syphilis, for example, is reported to have occurred in 14,015 people in Louisiana. There were over 20,000 reported cases of gonorrhea. These figures of course are by no means accurate and do not represent the actual incidence of gonorrhea in the state. A certain number of the cases reported were from military sources and undoubtedly there were a very large number of cases that were never reported at all in the civilian population.

The respiratory diseases as a group were greater in number than diseases of other organs or systems. There were 2294 cases of pulmonary tuberculosis. There were 1988 cases of unclassified pneumonia. There were 593 cases of pneumococcic pneumonia and slightly over 8000 cases of influenza, most of which cases, it is fair to assume, had respiratory manifestations and expressions.

The drop in contagious diseases in children is noteworthy. There were only 429 cases of diphtheria, for example; only 699 cases of scarlet fever; slightly over 100 cases of measles, with very few cases of chickenpox, probably not a true figure as probably most cases were not reported.

It is interesting to note that typhus fever is more than three times as great as is the incidence of typhoid fever. Only 76 cases of undulant fever were reported but one wonders how many of these cases were of a subacute character and might have been missed. It is distressing to note there were 120 cases of poliomyelitis. These are patients which had paralytic expressions, undoubtedly. Meningitis was not particularly prevalent, there being only 115 cases in the entire year.

On the whole the morbidity report is most satisfactory. Definitely the diseases that have to be controlled more adequately than they are now are those that are labeled venereal diseases. Respiratory infections are a tremendous cause for illness and even for death but distinctly there has been improvement in the death rate in these diseases. The other contagious and infectious diseases are, on the whole, being controlled most happily.

Another most satisfactory feature of the health conditions of Louisiana is the sharp marked drop in the maternal mortality rate, which in 1933 was 84.0 and which was in 1943 only 32.1; a drop of 61.8 per cent. The infant mortality rates have also been propelled sharply downward. In 1933 in Louisiana the rate was 70.1, according to the figures recently released from the Children's Bureau. This dropped to 44.7 in 1943, a fall of 36 per cent.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

CONSTRUCTIVE PROGRAM OF THE AMERICAN MEDICAL ASSOCIATION FOR THE IMPROVEMENT OF MEDICAL CARE

On February 16 the following release from the A.M.A. was carried over the radio and in the daily newspapers of the United States. In essence this represents a sincere attempt of the A.M.A. to provide adequate medical service for the people of the United States on a voluntary prepayment plan. Every member of our organization should read this plan and help by constructive thought and influence in the preparation of plans for such service in the State of Louisiana. You should also be informed that the Committee on Voluntary Prepayment Medical Service of the State Society is very actively at work and will unquestionably bring in some plan for consideration at the approaching meeting of the House of Delegates. This important step by the A.M.A. should be a motivating influence to the doctors and help them in solving intelligently the problem for our state.

RELEASE FROM THE A.M.A.

The Board of Trustees of the American Medical Association and the Council on Medical Service of the American Medical Association at a meeting just completed in Chicago have taken a long step toward protection of the American people against the costs of sickness through participation in a voluntary prepayment sickness plan now developed under the authority of the American Medical Association.

The fundamental step in the development of this plan was the establishment of standards of acceptance for medical care plans which have the approval of the Council on Medical Service of the American Medical Association. Any plan which meets the standards of the Council will be entitled to display the seal of acceptance of the American Medical Association on its policies and on all of its announcements and promotional material. In order to qualify for acceptance, the prepayment plan must have the approval of the state or county medical society in the area in which it operates. The medical profession in the area must assume responsibility for the medical services included in the benefits. Plans must provide free choice of a qualified doctor of medicine and maintain the personal, confidential relationship between patient and physician. The plans must be organized and operated to provide the greatest possible benefits in medical care to the subscriber.

Medical care plans may be in terms of either cash indemnity or service units, with the understanding that benefits paid in cash are to be used to assist in paying the costs incurred for medical service. The standards also include provisions relative to the actuarial data that are required, systems of accounting, supervision by appropriate state authorities and periodic checking and reporting of the progress of the plan to the Council.

Coincidentally with the announcement of these standards of acceptance, there was organized, as a voluntary federation, an organization known as Associated Medical Care Plans, Inc. This independent association will include as members all plans that meet the minimum standard of the Council on Medical Service of the American Medical Association. The Association Medical Care Plans will undertake to establish coordination and reciprocity among all of these plans so as to permit transference of subscribers from one plan to another and use of the benefits in any state in which a subscriber happens to be located. Under this method great industrial organizations with plants in various portions of the United

States will be able to secure coverage for all of their employees. Moreover, it will be possible for the Veterans Administration, welfare and industrial groups as well as government agencies, to provide coverage for the people in any given area through a system of national enrollment. In addition, the Associated Medical Care Plans, Inc., will undertake research and the compilation of statistics on medical care, provide consultation and information services based on the records of existing plans and engage in a great campaign of public education as to the medical service plan movement under the auspices of state and county medical societies.

The Board of Trustees of the American Medical Association also announced the establishment under its Council on Medical Service of a Division of Prepayment Medical Care Plans with a director and a staff who will administer the activities of the Council on Medical Service related to the promotion and development of medical care plans in all of the states.

In announcing its proposals for a nationwide provision of sickness insurance on a mutual nonprofit basis, the Association through its President and the Board of Trustees authorizes the publication of its complete health program with the ten points, which include the development of services in the field of preventive medicine, maternal and child health, voluntary prepayment plans for protection against the costs of sickness, compensation for loss of wages due to illness, the care of the veteran and the development of a high standard of housing, nutrition, clothing and recreation. The American Medical Association last June through its Board of Trustees and Council on Medical Service announced a 14-point program to improve the health and medical care situation in the United States. In October 1945 the interpretation of these 14 points and methods of implementation were adopted by the Council on Medical Service. In December 1945, the House of Delegates approved the whole program, suggested its rearrangement and directed the Board of Trustees to keep the program constantly up to date so that it will stay at least even with and, if possible, a step ahead of the needs of the public.

With this in mind the Board of Trustees has adopted a restatement of the 14 point program, which clarifies still further the position of the American Medical Association on some of these points and brings into the program more definitely such matters as maternal and child welfare, medical research, the medical care of the veteran and the part to be played by the voluntary health agencies.

This restatement follows:

NATIONAL HEALTH PROGRAM OF THE AMERICAN MEDICAL ASSOCIATION

1. The American Medical Association urges a minimum standard of nutrition, housing, clothing and recreation as fundamental to good health and as an objective to be achieved in any suitable health program. The responsibility for attainment of this standard should be placed as far as possible on the individual, but the application of community effort, compatible with the maintenance of free enterprise, should be encouraged with governmental aid where needed.

2. The provision of preventive medical service through professionally competent health departments with sufficient staff and equipment to meet community needs is recognized as essential in a health program. The principle of federal aid through provision of funds or personnel is recognized with the understanding that local areas shall control their own agencies as has been established in the field of education. Health departments should not assume the care of the sick as a function since administration of medical care under such auspices tends to a deterioration in the quality of the service rendered. Medical care to those unable to provide for themselves is best administered by local and private agencies with the aid of public funds when needed. This program for national health should include the administration of medical care including hospitalization to all those needing it but unable to pay, such medical care to be provided preferably by a physician of the

patient's choice with funds provided by local agencies with the assistance of federal funds when necessary.

3. The procedures established by modern medicine for advice to the prospective mother and for adequate care in childbirth should be made available to all at a price that they can afford to pay. When local funds are lacking for the care of those unable to pay, federal aid should be supplied with the funds administered through local or state agencies.

4. The child should have throughout infancy proper attention including scientific nutrition, immunization against preventable disease and other services included in infant welfare. Such services are best supplied by personal contact with the mother and the individual physician but may be provided through child care and infant welfare stations administered under local auspices with support by tax funds whenever the need can be shown.

5. The provision of health and diagnostic centers and hospitals necessary to community needs is an essential of good medical care. Such facilities are preferably supplied by local agencies, including the community, church and trade agencies which have been responsible for the fine development of facilities for medical care in most American communities up to this time. Where such facilities are unavailable and cannot be supplied through local or state agencies, the federal government may aid, preferably under a plan which requires that the need be shown and that the community prove its ability to maintain such institutions once they are established (Hill-Burton bill).

6. A program for medical care within the American system of individual initiative and freedom of enterprise includes the establishment of voluntary nonprofit prepayment plans for the costs of hospitalization (such as the Blue Cross plans) and voluntary nonprofit prepayment plans for medical care (such as those developed by many state and county medical societies). The principles of such insurance contracts should be acceptable to the Council on Medical Service of the American Medical Association and to the authoritative bodies of state medical associations. The evolution of voluntary prepayment insurance against the costs of sickness admits also the utilization of private sickness insurance plans which comply with state regulatory statutes and meet the standards of the Council on Medical Service of the American Medical Association.

7. A program for national health should include the administration of medical care, including hospitalization, to all veterans, such medical care to be provided preferably by a physician of the veteran's choice with payment by the Veterans Administration through a plan mutually agreed on between the state medical association and the Veterans Administration.

8. Research for the advancement of medical science is fundamental in any national health program. The inclusion of medical research in a National Science Foundation, such as proposed in pending federal legislation, is endorsed.

9. The services rendered by volunteer philanthropic health agencies such as the American Cancer Society, the National Tuberculosis Association, the National Foundation for Infantile Paralysis, Inc., and by philanthropic agencies such as the Commonwealth Fund and the Rockefeller Foundation, and similar bodies have been of vast benefit to the American people and are a natural outgrowth of the system of free enterprise and democracy that prevail in the United States. Their participation in a national health program should be encouraged and the growth of such agencies when properly alministered should be commended.

10. Fundamental to the promotion of the public health and alleviation of illness are widespread education in the field of health and the widest possible dissemination of information regarding the prevention of disease and its treatment by authoritative agencies. Health education should be considered a necessary function of all departments of public health, medical associations and school authorities.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR OF MEETINGS

March 12. Medical Toastmasters, New Orleans Athletic Club, 6:30 p. m.
Eye, Ear, Nose and Throat Staff, 8 p. m.
Orleans Parish Radiological Society, Radiology Department, Charity Hospital, 8 p. m.
March 13. Woman's Auxiliary, Orleans Club, 3 p. m.
Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
Touro Infirmary Staff, 8 p. m.
March 14. Clinico-pathologic Conference, Touro Infirmary, 12 noon.
March 15. I. C. R. R. Hospital Staff, 12:30 p. m.
March 18. Hotel Dieu Staff, 8 p. m.
March 19. Medical Toastmasters, New Orleans Athletic Club, 6:30 p. m.
Charity Hospital Medical Staff, 8 p. m.
March 20. The Orleans Society of X-Ray Technicians, 7:30 p. m.
Charity Hospital Surgical Staff, 8 p. m.
March 22. L. S. U. Faculty Club, 8 p. m.
Ochsner Clinic Staff, 8:30 p. m.
March 25. Board of Directors, Orleans Parish Medical Society, 8 p. m.
March 26. Medical Toastmasters, New Orleans Athletic Club, 6:30 p. m.
Baptist Hospital Staff, 8 p. m.
March 27. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
French Hospital Staff, 8 p. m.
March 28. Clinico-pathologic Conference, Touro Infirmary, 12 noon.
DePaul Sanitarium Staff, 8 p. m.
March 29. New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.
April 1-4. The New Orleans Graduate Medical Assembly, Municipal Auditorium.
April 4. Joint meeting Orleans Parish Medical Society with The New Orleans Graduate Medical Assembly, Hutchinson Memorial Auditorium, 8 p. m.
April 5. Medical Advisory Committee, Charity Hospital Visiting Staff, 11 a. m.
April 8. Scientific Meeting, Orleans Parish Medical Society, 8 p. m.

NEWS ITEMS

Dr. Ruth Aleman attended a meeting of the American Pediatric Society in Detroit January 15-18.

Dr. Ernest Celli was recently elected president of the New Orleans Hospital Council. Dr. Lewis E. Jarrett was elected vice-president.

Dr. Daniel J. Murphy addressed the membership of the Second District Medical Society at their January meeting.

Dr. Wilbur Smith was re-elected president of the National Collegiate Athletic Association at their annual meeting which was recently held in St. Louis.

Dr. Edwin A. Socola recently addressed members of Agramonte, honorary premedical society at Loyola university, at their eighth annual banquet.

Dr. H. Randolph Unsworth read a paper entitled Psychosomatic Medicine before the recent meeting of the American Therapeutic Society in Cleveland.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of very month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

ANNUAL MEETING

Information has been received from Dr. O. B. Owens, Chairman of the Committee on Arrangements for the 1946 meeting, that the following doctors will serve as chairmen of subcommittees:

Dr. R. E. C. Miller—Arrangement of Commercial Exhibits.

Dr. R. E. McGill—Badges.

Dr. Noel T. Simmonds—Commercial Exhibits.
Dr. D. B. Barber—Decorations.
Dr. A. E. Percy—Entertainment.
Dr. James A. White—Finance.
Dr. Robert H. Bryant—Golf.
Dr. R. U. Parrott—Halls and Meeting Places.
Dr. H. O. Barker—Lanterns and Projectors.
Dr. A. L. Culpepper—Luncheons.
Dr. R. B. Wallace—Publicity.
Dr. H. H. Hardy—Registration.
Dr. R. G. Masterson—Scientific Exhibits.
Dr. B. H. Texada—Signs.
Dr. J. T. Cappel—Transportation.

Drs. D. B. Barber, A. L. Culpepper, E. R. Gandy, J. H. Landrum, F. M. Lett and King Rand, will serve as the Advisory Committee to the Committee on Arrangements.

SPECIAL NOTICE

Information has been received that hearings on the Wagner-Murray-Dingell Bill originally scheduled to begin in the Senate on March 18 have been postponed until April 2 and will last for about one month.

ATTENTION MEDICAL VETERANS

Applications are now being accepted by the Deans' Committee for residencies in New Orleans Veterans (LaGarde) Hospital. Address Committee 1430 Tulane Ave., New Orleans 13.

DR. MAGRUDER RESIGNS

One of the most influential members of the Board of the Tulane Educational Fund in matters medical was Dr. M. J. Magruder. Dr. Magruder had been on the Board since 1914 and in 1924 he became the Chairman of the Medical Advisory Committee, on which he served ten years previously. Many of the Tulane alumni have come in contact with Dr. Magruder and all medical alumni appreciate how influential and unsparing of his time was Dr. Magruder in improving the character and caliber of the medical school.

DR. MATAS AND OTHERS HONORED BY TOURO BOARD

On Wednesday, January 20, the Board of Managers of the Touro Infirmary presented to Dr. Rudolph Matas a gold plaque in recognition of his fifty years of service on the staff of this institution. Up until the time of his retirement several years ago, Dr. Matas was active and busy in surgical affairs of this splendid institution.

In addition to this tribute to Dr. Matas, gold cards in recognition of their appointment as consultants were presented to four other staff members. These were Dr. Randolph Lyons and Dr. Charles Eshleman, consultants in medicine, and Dr. Isidore Cohn and Dr. L. H. Landry, consultants in surgery.

CHICAGO MEETINGS

Dr. Val Fuchs, President of the State Medical Society, and Dr. P. T. Talbot, Secretary-Treasurer, attended as representatives of the organization, the Conference of Secretaries and Editors of State Societies, National Conference on Medical Service, and Conference on Medical Education and Licensure, held in Chicago in February.

Dr. Roy B. Harrison was in attendance, as representative of the Louisiana State Board of Medical Examiners, at the Conference on Medical Education and Licensure and presented a paper entitled "Licensure by Reciprocity or Interstate Endorsement".

Dr. Max Lapham, represented Tulane Medical School and Dr. George McCoy, Louisiana State University Medical School, at this conference also.

THE 64TH GENERAL HOSPITAL CITED

Louisiana State University School of Medicine Base Hospital No. 64 has been awarded a certificate by Major General Norman T. Kirk, Surgeon General of the U. S. Army. This reads as follows: "The excellent cooperation which we received from Louisiana State University and the outstanding service which was rendered by the 64th General Hospital, sponsored, organized and staffed by LSU, contributed materially to the exceptional record of the medical department."

COL. C. E. GORMAN, M.C.

Col. C. E. Gorman has also been honored, for outstanding services rendered to the U. S. Army, by receiving the Legion of Merit.

LT. COL. MICHAEL E. DEBAKEY, M.C.

The Legion of Merit has been awarded by the Surgeon General of the U. S. Army to Lt. Col. Michael E. DeBakey, chief of general surgery branch, surgical consultants division.

NEWS ITEMS

Dr. B. B. Weinstein has been elected to honorary membership in the Association Mexicana de Ginegologia y Obstetricia.

At a recent meeting of the Louisiana Conference of Social Welfare, Dr. Samuel Barkoff was one of the speakers.

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons Foundation announces that the annual prize contest will be conducted again this year. For information address Dr. James R. Bloss, Secretary, 418 11th Street, Huntington 1, W. Va.

Appointments to fill vacancies in the Reserve Corps of the United States Public Health Service are now being made, and examinations for Regular Corps appointments will be held in April and May, Surgeon General Thomas Parran has announced.

HULL COMMENCEMENT ORATOR

Dr. Edgar Hull, director of the Department of Medicine at the Louisiana State University School of Medicine, delivered the Commencement Address at Loyola University's full trimester commencement on the evening of February 7. The title of his talk was "The Inseparability of Liberal and Practical Knowledge."

TULANE SCHOOL OF TROPICAL MEDICINE

It has been announced that $10,000 has been allotted by the National Institute of Health at Bethesda to the School of Tropical Medicine, Tulane Medical School. This money is to be used for investigative work in amebiasis.

NEW TULANE APPOINTMENTS

Dr. Maxwell Leonard Littman, Bacteriology in the School of Medicine; Dr. Joseph Edwin Schenthal, instructor in medicine in the School of Medicine; Dr. Harry Corbett Tiller, instructor in medicine, in the School of Medicine; and Dr. Richard P. Vieth, instructor in pediatrics in the School of Medicine.

PERCENTAGE OF BIRTHS IN HOSPITALS

In 1937 in Louisiana 27.5% of all births occurred in hospitals. In 1944 62% of such births were in hospitals. Of the EMIC births, 84% were institutional.

It might be observed that Louisiana is well down on the list of the births taking place in hospitals in various states. In some states as many as 95% to 98% of babies are delivered in hospitals.

AMERICAN HOSPITAL ASSOCIATION

The American Hospital Association has prepared three pocket-size booklets concerning the establishment of new hospital facilities. Two of these booklets are for organizations already established, one of which is entitled "Organization of Medical Staff" and the other "Governing Board of the Hospital". These booklets may be obtained at 20 cents a copy or in larger quantities at 12 cents each, from the Department of Public Relations, American Hospital Association, Chicago 10.

NEW NATIONAL FOUNDATION TO COMBAT ARTHRITIS

This foundation is being established on a national basis to study the cause and treatment of rheumatic diseases. The purpose is to raise two and a half million dollars to establish at Hot Springs National Park, Arkansas, a National Arthritis Research Foundation. President Harry S. Truman has already accepted the position of Honorary Chairman of this foundation.

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The annual meeting of this organization will be held at the Drake Hotel, Chicago, Illinois, June 20-22. These dates have been selected so that the opportunity may be given to men who are preparing to attend the meeting of the American Medical Association in San Francisco to stop at Chicago in transit.

LOUISIANA STATE UNIVERSITY MEDICAL SCHOOL

Dr. George W. McCoy, dean of Louisiana State University Medical School, has announced that the following men have returned from military duty and are now actively engaged in teaching: Dr. Oscar Blitz, clinical assistant professor in medicine; Dr. F. A. Eigenbrod, clinical instructor in medicine; Dr. J. E. Garcia, clinical assistant professor in medicine; Dr. Hugh C. Ilgenfritz, assistant professor in surgery; Dr. C. B. Kennedy, clinical assistant professor in dermatology; Dr. Gilbert Tomskey, clinical instructor in urology; Dr. J. O. Weilbaecher, Jr., clinical assistant professor in medicine; Dr. J. C. Swartzwelder, assistant professor in public health.

Other appointments include Dr. Jacob Faust, clinical assistant in medicine; Dr. George M. Haik, associate professor and director of the department of ophthalmology; Dr. Alfred B. Longacre, clinical instructor in surgery; Dr. Emile Maltry, Jr., clinical instructor in urology; Dr. Theodore Papermaster, instructor in pediatrics; Dr. John C. Suares, clinical assistant in ophthalmology; Dr. Louis A. Toth, assistant professor in physiology; Dr. George Vickery, clinical instructor in urology; Dr. Joseph E. Warren, instructor in obstetrics and gynecology; Dr. Stephen A. Chavez, assistant in pathology, and Dr. Norman Burnstein, assistant in pathology.

TOURO INFIRMARY

A regular monthly meeting of the Medical Staff of Touro Infirmary was held on Wednesday, February 13 at 8 p.m. The following program was presented: a clinico-pathological conference by the department of pathology with a clinical discussion by Dr. Samuel Kerlin; A New Portable Plethysmograph, Dr. G. E. Burch; The Present Day Use of Contact Lenses with Demonstration, Dr. A. Braunstein.

OCHSNER CLINIC

A meeting of the Ochsner Clinic staff members and fellows was held on Friday, January 25 at 8:30 p.m. in the Reception Room of the Clinic. The program was as follows: Lymphosarcoma with Primary Manifestations in the Gastrointestinal Tract by Dr. Robert D. Moreton, radiologist at the Scott and White Clinic, Temple, Texas; Integral Medicine by Dr. Albert J. Sullivan, and Carcinoma of the Transverse Colon with Fistula into Jejunum by Dr. James R. Whitley.

A meeting of the Ochsner Clinic staff members and fellows was held on Friday, February 22 at 8:30 p.m. in the Reception Room of the Clinic. The following program was presented: Dr. Thomas Findley, Department of Medicine, spoke on Why Is the Kidney?; Dr. Guy A. Caldwell, Department of Orthopedics, talked on The Status of Lagarde Negotiations; Dr. Homer Kirgis, Fellow in Neurosurgery, spoke on Subdural Hydroma.

CHARITY HOSPITAL

A meeting of the Medical Division of the Charity Hospital Visiting Staff was held on Tuesday, February 19 at 8 p.m. in the Auditorium of the hospital. Following is the program: Dr. Grace A. Goldsmith, Case Report—Anemia Treated with L. Casei Factor; Dr. Albert Segaloff, Cases of Dwarfism.

SOUTHERN BAPTIST HOSPITAL

At the Clinical Staff Meeting on January 22 at 8 p.m., the following program was presented: Case Report—An Unusual Postpartal Complication, by Dr. R. W. Sharp with a discussion by Drs. P. H. Jones and E. H. Lawson; Intra-intestinal Complications of Amebiasis, by Dr. D. N. Silverman; Death report by Dr. Fred K. Vaughan.

DEPAUL SANITARIUM

The Regular Monthly Meeting of the Medical Staff of De Paul Sanitarium was called to order at 8:10 p.m. on January 24, with Drs. Anderson, H. Colomb, A. Colomb, Thompson, Friedrichs, May, Willoughby, Hill, Beach, Holbrook, Danna, Barkoff, Connelly, Unsworth, and Dubos in attendance.

The scientific part of the program commenced with Dr. Unsworth reporting the action of dilantin in bringing about a marked improvement in the conduct of two cases who were constantly in a state of misbehavior before its use. One of the cases was presumably a schizophrenic, the other a manic, but as definite improvement was observed the possibility of epilepsy without convulsions was considered. Dr. Unsworth stressed the fact that encephalograms should be run before any definite conclusions are drawn, and stated that in the future encephalograms would be run routinely on such cases.

Dr. Thompson reported the death of Case No. 4324 (Mrs. R. H.), a white female, age 37 years, who entered the hospital in a marked state of dehydration and died within 48 hours after admission. There was a history of numerous previous similar attacks of illness during the past twelve years, during which she would refuse to eat or drink. Her temperature rose to 106.0° shortly before death with a blood pressure reading of zero. At autopsy Dr. Friedrichs reported acute inflammation of all organs. The case was discussed by Drs. Holbrook and Dubos.

Dr. Holbrook reported the death of Case No. 4242 (Miss D. N.), a white female, age 75, who had been suffering from mental depression complicated by diabetes for many years. She constantly spoke of attempting suicide and rebelled against all forms of treatment. She received eleven electroshock treatments at De Paul followed by marked improvement. She expired suddenly, six weeks following the termination of the series, apparently from coronary thrombosis. At autopsy, organic heart disease with generalized arteriosclerosis, infarcts of the lungs, chronic interstitial nephritis, and hepatic cirrhosis were found.

The Chairman called for the reading of the minutes of the previous meeting and after due motioning and seconding they were adopted as read. This was followed by reading of the reports of various departments for the year of 1945, all of which showed increases over the previous year.

Sister Anne asked that more complete information be obtained prior to the admission of patients, in order that they not be admitted in a moribund condition. She also thanked the Staff for their good work and attendance at meetings during the year 1945 and announced that she had secured the services of Dr. Hunter P. Harris as resident physician.

As Dr. Walther, one of the Staff Consultants, died during the past month, Dr. Unsworth moved "that a committee be appointed to draw up appropriate resolutions concerning his death which should be spread into the minutes", which motion was seconded by Dr. Anderson and passed.

Louis J. Dubos, M.D.,
Secretary.

LOUISIANA HOSPITALS APPROVED BY COLLEGE OF SURGEONS

The following Louisiana Hospitals have been approved by the American College of Surgeons:

Baptist Hospital, Alexandria; Baton Rouge General Hospital (provisional approval) and Our Lady of the Lake Sanitarium, Baton Rouge; Elizabeth Sullivan Memorial Hospital, Bogalusa; Haynesville Hospital, Haynesville; Parker Hospital of the East Louisiana Hospital for Insane, Jackson; Lafayette Charity Hospital, Lafayette; St. Patrick's Hospital, Lake Charles; Riverside Sanitarium, St. Francis Sanitarium and Vaughan-Wright-Bendel Clinic Hospital, all in Monroe; Charity Hospital, DePaul Sanitarium, Eye, Ear, Nose and Throat Hospital, Flint-Goodridge Hospital of Dillard University, Hotel Dieu, Illinois Central Hospital, Mercy Hospital-Soniat Memorial, New Orleans Hospital and Dispensary for Women and Children, Southern Baptist Hospital and Touro Infirmary, all in New Orleans; Fuqua Memorial Hospital of the Central Louisiana State Hospital for the Insane and Huey P. Long Charity Hospital, Pineville; Highland Sanitarium, North Louisiana Sanitarium, Shreveport Charity Hospital, Shriners' Hospital for Crippled Children, T. E. Schumpert Memorial Sanitarium and Tri-State Hospital, all in Shreveport.

INFECTIOUS DISEASES IN LOUISIANA

There were reported in the weekly morbidity report for the State of Louisiana for the week ending January 5 the enormously large number of 6313 cases of influenza. Evidently the epidemic of influenza was statewide. Other diseases reported in numbers greater than 10 include 29 cases of pulmonary tuberculosis, 23 of mumps, 21 of unclassified pneumonia, 16 each of diphtheria and scarlet fever, 14 of chickenpox and 13 of pneumonia.

In the following week, closing January 12, the influenza epidemic was still rampant as there were 5221 cases reported in this second week of January. Other diseases included 49 cases of septic sore throat, 47 of pulmonary tuberculosis, 22 of unclassified pneumonia and of measles, 14 of malaria, as well as 10 of scarlet fever. There were also listed seven cases of typhus fever.

The influenza epidemic of early January had subsided as the number of cases reported for the week ending January 19 was only 2253. There were likewise listed 58 cases of pulmonary tuberculosis, 16 of unclassified pneumonia, 11 each of scarlet fever, diphtheria and hookworm infestation. Also reported were six cases of poliomyelitis, three of them arising in Claiborne Parish, and for the first time in many weeks a case of smallpox was discovered in Concordia Parish.

For the last week for which figures are available, namely January 26, again there was a sharp reduction in number of cases of influenza, there being 1202 reported. Pulmonary tuberculosis was found in 51 instances and 13 cases of measles were reported. No other diseases, reportable in nature, occurred in figures greater than nine. There were two cases of poliomyelitis listed this week.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported for the week ending January 12, 165 deaths in the City of New Orleans. These were divided 113 white, 52 colored and 14 were in children under one year of age. This was a reduction of 21 deaths in the city over the previous week. The weekly mortality index for January 24 shows a jump in the number of deaths, there being 174 people who died in New Orleans this week, 108 white and 66 non-white and of the total 19 were under one year of age. For the week terminating January 26 there were 31 less deaths than occurred the previous week; 99 of these were white individuals, 42 colored and only eight children under one year of age. There were 40 more deaths in the city than in the previous week, in the week ending February 2. These were apportioned 118 white, 63 non-white and 12 children under one year of age. For the week which closed February 9 the death rate was virtually static; five less deaths, three more in the white, eight less in the colored race with nine children expiring in this group.

A CORRECTION

In a recent editorial it was stated that Dr. Edwin L. Zander heads the committee which has to do with obtaining office space for returning medical officers in the City of New Orleans. This is in error as Dr. Eugene H. Countiss is chairman of this committee; Dr. Zander is chairman of the Committee on Postwar Planning of the State Society.

CHESTER ARTHUR STEWART, M. D.

1890-1946

The medical faculty of the Louisiana State University School of Medicine suffered a severe loss when their Professor of Pediatrics, Dr. Chester Arthur Stewart, died suddenly on February 8, 1946. Dr. Stewart joined the staff of the Medical School in 1941. Since that time he has been active not only in his teaching and hospital responsibilities but also in local civic activities. He took particular interest in the problems of tuberculosis, not only in children but also in adults and was largely responsible for the institution of the tuberculosis roentgen examinations at the Charity Hospital. He was a member of the American Academy of Pediatrics as well as the Orleans Parish Medical Society and the Louisiana State Medical Society. Dr. Stewart was a man of force and vigor. Combining these attributes with a pleasant and agreeable personality, he soon became recognized as one of the outstanding pediatricians in the South. It is with the deepest regret that we record the death of this outstanding character.

LIONEL JOSEPH BIENVENU

1897-1946

One of the loyal members of the Louisiana State Medical Society, Dr. Lionel Joseph Bienvenu, died on the eighth of February. Dr. Bienvenu practiced medicine in Opelousas after his graduation from Tulane in 1921. He was a member of the State Society from 1923 until the time of his death.

RUFUS JACKSON

1883-1946

Dr. Rufus Jackson, a member of the East Baton Rouge Parish Medical Society was accidentally killed on February 20 in a tractor accident according to a newspaper account. Dr. Jackson was one of the prominent physicians of Baton Rouge, not only as a physician but as a civic leader. He was also an active member of the State Society.

WOMAN'S AUXILIARY

Mrs. Paul Lacroix, President of the Woman's Auxiliary of the Louisiana State Medical Society, was entertained at the home of Mrs. Alfred D. Long, Steele Boulevard, Baton Rouge. Mrs. Long, the hostess, was assisted at the tea table by Mrs. Lester Williams and Mrs. Rhett McMahon, whose husband is president-elect of the State Society. Other ladies assisting Mrs. Long were Mrs. J. W. McGehee, Mrs. B. B. Lane, Mrs. D. W. Landess, Mrs. Cecil O. Lorio, Mrs. A. W. Martin, and Mrs. Frank J. Jones. Mrs. Lacroix was accompanied to Baton Rouge by Mrs. Donovan C. Browne, Mrs. John S. Dunn, Mrs. C. Grenes Cole, Mrs. Daniel J. Murphy, Mrs. J. Kelly Stone, Mrs. Roy B. Harrison, Mrs. Carroll Gelbke and Mrs. Cassius Peacock, all of New Orleans. These ladies were special guests at a luncheon at the Heidelberg Hotel where Mrs. R. R. Rabalais was hostess.

FROM THE AUXILIARY PRESIDENT TO HER MEMBERS

I will begin my letter to you with an invitation. On May 6, 7 and 8, the Louisiana State Medical Society and the Woman's Auxiliary to the Louisiana State Medical Society will hold at State Convention in Alexandria.

It would indeed be nice to see each of you and extend to you a personal invitation; since I cannot, will you please consider this one? We want you to take part in the meeting and enjoy it with us; we want you to come so that we can all really know each other, and all plan together for a larger and even more active auxiliary in the future. I hope to see you there.

Since my last chat with you I have visited with the Baton Rouge Auxiliary. What a delightful visit. Eight members of the Board accompanied me to the meeting which was held at the home of Mrs. Arthur Long, our State President-elect. It was a well attended informal meeting with everyone joining in the general discussion of how we, as auxiliary members, could best help our doctors combat our government's proposed compulsory health insurance bill. The ladies of the Baton Rouge Auxiliary voted to take charge of the March-of-Dimes collection for Infantile Paralysis sufferers in the motion picture theatres, the following week. After the meeting we had luncheon and a most enjoyable time.

At the meeting of the Orleans Parish Auxiliary in February Mrs. Carroll Gelbke, President, recommended that the April meeting be advanced one week, to enable the doctors' wives, who will be visiting in New Orleans for the Graduate Medical Assembly, to attend their monthly meeting and tea. Mrs. Eberhard Duetsch gave a splendid dramatic reading of "The Glass Menagerie", following the business meeting and later, tea was served.

I have called an Executive Board meeting for February 27 and am looking forward with much pleasure to the inspiration and helpful suggestions which are sure to come out of this meeting.

Mrs. W. W. Potter, President of the Woman's Auxiliary to the Southern Medical Association has informed me of their decision to use the Jane Todd Crawford Memorial Fund as a loan Fund to a Southern medical student, graduate or physician to study postgraduate work in gynecology at a Southern medical school. This decision to use the Fund for the benefit of the living should result in more generous support of this project.

On March 30 we are privileged to do honor to our doctors, it will be Doctors' Day. We, who as wives, have shared the burdens and anxiety of these quiet self-sacrificing men and realize, as few others do, their earnest humble effort to be of service to their fellow men, and ask that on this day they be given the tribute of "Well Done".

In the Quarterly Bulletin of the Missouri Woman's Auxiliary Mrs. D. W. Thomas, our National President, quotes from Florence Fisher Parry of Pittsburgh, the following tribute to the doctor: "Nothing can take his place — not priest nor minister, nor all the clinics that science can provide. There is a rapport between him and his patient which has been able to accomplish miracles and to restore to the breasts of mothers babies about to die; and to the arms of lovers, beloved turned back from death. For there's something about the Family Doctor that casts out fear, melts apprehension, breaks down suspense, performs the miracle of Faith.

"We know how hard the life he has chosen. We know that he's abused, imposed upon and worn. His days are not his own and his nights are snatched and torn, what compensation is his? Oh, I think he is greatly repaid; greatly to be envied. His rewards are kingly prizes.

"The prize is 'Welcome'. That's a great reward: To have one's presence a blessing. To know that the mere sight of you brings hearts' ease; stirs the wan pulse, brightens the fading eye.

"The prize of 'Conquest'. All men like that. Winning against odds. To stay a fever; energize a pulse; throw breastworks against the advance of disease. Here, indeed, are paths of glory that do not lead to the grave but far from it. I cannot think of greater conquest.

"The prize of 'Confidence'. That's a proud possession. Some priests know it; some ministers and friends, if they're time tried. But the Family Doctor is the final confessional, a refuge not only for repentant hearts but sick and craven hearts as well.

"The prize of 'Human Wisdom'. That deep knowledge that comes from being continually exposed to the pitiful frailties of mankind. You do not deceive the Family Doctor; you do not attempt to. But knowing you he is still compassionate; for he has learned to expect little greatness in his fellowman.

"Above all, I think I envy him his prize of 'selflessness'. He is free for he has already given up his life, so has nothing left to fetter him.

"There is much talk of state control of medicine; and legislation dips its partial fingers into the sterile waters of our doctors seeking to arbitrate over their fields of mercy. I dare say there are certain restricted fields of medicine in whose confines the legislative hand could work productively. But the ineffable value of the human touch in medicine, that transcends all legislation. What legislation indeed, what politics, what state control or organized social program can hope to substitute that Human Bond that exists between the Family Doctor and his patient?"

Mrs. Paul G. Lacroix.
Press & Publicity Chairman,
Mrs. Roy Carl Young.

BOOK REVIEWS

Doctors at War: By Morris Fishbein, M. D. New York, E. P. Dutton and Company, 1945. Illus. Price $5.00.

Covering every phase of medical warfare, Doctors at War tells, for the first time, the splendid and creative story of American doctors in action in World War II and out of their wartime medical research have come vital discoveries which will greatly benefit mankind in the postwar years.

Major-General Norman T. Kirk, Surgeon General of the Army says "Had this war been fought under the medical conditions that prevailed in 1918, good as they were for their period, 60,000 wounded soldiers would not be alive today; 9,000 men who would have been crippled for life would not have been restored to complete health; the Army's death rate from disease would be twenty times higher than it is, and the incidence of malaria in mosquito-infested regions would not have been reduced by 75 percent."

Written for the layman, as well as the doctor, Doctors at War occupies a unique place in the medical records of this war. Dr. Fishbein has done an excellent job of editing and the sixteen leading authorities responsible for organizing our medical warfare give stirring accounts of what each branch has accomplished. These narratives provide adequate proof that the nation's doctors served nobly in every capacity to which they were called.

Presented in the volume are 82 photographs, plus charts and diagrams and an index.

C. P. May, M. D.

A Primer of Electrocardiography: By George Burch, M. D., and Travis Winsor, M. D. Philadelphia, Lea & Febiger, 1945. pp. 215. Price $3.50.

This small book of five chapters of one hundred and ninety pages with eight pages of appendix is written to give the student a more comprehensive view of the fundamental principles of the electrocardiogram. In the past there has been too much reliance placed on the pictorial view. The student was expected to remember that electrocardiograms of certain forms were associated with certain clinical diagnoses without knowing why.

By good drawings and explanations in the text the spread of the impulse through the heart is so described that the student can visualize what is going on and why certain changes in the electrocardiogram occur when certain conditions in the myocardium are present and also the importance of the position of the heart in the body. Enough is said about the monocardiogram or vectorcardiogram or the QRS loop to give one an idea of what is meant by these terms. Three pages are devoted to description of the ventricular gradient.

One might say that nothing is found to justify an adverse criticism of this book. There are a few minor things that probably could have been stated in a little different way to some advantage. The reviewer has no hesitation in recommending this book to those who are interested in electrocardiography.

J. M. Bamber, M. D.

The Psychology of Women: By Helene Deutsch, M. D. Vol. II: Motherhood. Grune & Stratton, 1945. pp. 498. Price $5.00.

The first volume, which dealt with the development of feminine personality characteristics is now continued in the second and final volume entitled "Motherhood." There is a short discussion of woman's present social position and the effect of the social factors on motherhood, but almost all of the emphasis in this book is put on the psychological forces within the individual woman and deals with the different feminine types and the reactions of each type to motherhood.

The childhood idea of having a baby is to have a possession, in the early infantile period to gain the possession actively as the mother, in the oedipus period to gain the child passively as a gift from the father. The second is the prototype of the passive feminine mother, and the first is the prototype of the active aggressive or matriarchial mother.

The sexual act in woman is actually a double activity made up first of coitus or incorporation, and second childbirth or elimination. Coitus in a woman is not a demand for a discharge of tension but is a demand for erotic pleasure. The woman's tensions at the onset of coitus produce a contraction of the vagina, inducing the man to make the aggressive assult, following which the woman's activity is entirely in response to the man's activity, is with and not against the man.

Sterility may occur when a woman's activity is aggressive or expulsive and can occur because of psychological conflicts producing fear of childbirth. Even during coitus there is consciously or unconsciously the fear of dying in childbirth. The fear of dying in childbirth is based on the age-old sense of guilt which comes from many sources. One source is the unconscious idea "I cannot have a child" from the girl's unconscious fear that she has destroyed her genitals. Sterility also occurs in some very motherly women who project their maternal instinct onto their husband's and feel a need to protect their husbands from the duties of fatherhood.

During pregnancy, in almost every woman, can be found a tendency to interrupt the harmony of the pregnancy state; particularly in the masochistic woman is this true because of the woman's fear that the fetus is living parasitically and is exploiting the mother.

Guilt feelings about pregnancy are closely tied up with woman's relationship to her own mother, dating back to the childhood phase when the greatest burden of the little girl's emotional life was the rivalry with the mother. It is interesting that many neurotic women are more free from their neuroses during pregnancy because they are brought from fantasy into reality. Also, there is a real narcissistic gain in bearing a child which can be valuable quite apart from the motherliness as such.

There is considerable discussion about abortions and excessive guilt reactions therefrom. It is interesting how a father's willingness to have the mother undergo an abortion is strongly resented unconsciously by the mother, causing the woman to turn against her husband.

There is a very good chapter on deliveries. The author emphasizes the fear of childbirth more than the pain. Throughout the history of all cultures the fear of dying in childbirth is present. Immediately before delivery even very mature women are transformed into a child, with preoccupation about the mysteries of childbirth, the fear of losing the child, and another important fear, "the child is losing me." One defense against this fear is an increased activity immediately before and during delivery. Also the woman's activity is demanded by the feeling that she must participate. The over-passive woman is apt to have difficulty at this point and she may become panicky or react with rage because of her own helplessness. Doctor Deutsch states that the woman wants to fight the birth pains largely with her own resistance, and the willingness to submit to anesthesia is not always an expression of intolerance of pain but rather an escape from unbearable fear. Narcosis is apt to give the mother the feeling that she has accomplished nothing and often gives rise to the unexpressed thought, "is this my child?" Throughout delivery and confinement, the author feels that the mother should have her own mother or older women present, since the confinement situation has always been woman's domain.

In the mother-child relationship each member develops a gift of observation into each other's conscious or unconscious impulses. If the mother strives too much to achieve the identification with the child, she can encourage the child to imitate other models instead of the mother, which becomes an actual loss for the child. The child is very sensitive to the mother's inner untruthfulness. The mother must learn that the child's relationship to her is only a temporary stage in his existence which he must transcend. The mother who uses the approach to her child, "Will you abandon me who has suffered so much?" will probably be refused and become an embittered mother.

In the discussion on unmarried mothers the author has found that the illegitimate child should not be taken away without the mother being allowed to see, know, and raise the child for a period of time before separation. Such may be painful, but it is less deeply traumatic than the frustration of immediately removing the child.

In the pre-climacteric there is a strong urge to re-experience motherhood and also to renew old interests and develop old or new creative abilities. The menopause is likened by the author to puberty. There may be seen a renewing of the infantile state in respect to the father and mother. It is the "dangerous age" in which she behaves like a young girl, brags about her personality, makes friends with dubious individuals; jealousy appears, paranoid ideas resulting from latent homosexuality are seen. Even changes in skin and thyroid occur, which are similar to changes occurring in puberty. This resurgence of creative and sexual activity may last for many years long after the physiological menopause.

In summary, this book is full of detailed, valuable information, and together with the first volume clarifies the specific feminine psychology.

Walker Thompson, M. D.

Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases: By Richard P. Strong, M. D., Sc. D., D. S. M., C. B., 7th ed. Philadelphia, The Blakiston Co. 1944. 2 v. illus. Price $21.00.

This foremost work on tropical medicine in English appeared in two volume form as a sixth edition in 1942. It went through three printings in 1943. A seventh edition was issued in 1944 and was reprinted again in 1945. The present printing is available in both two volume and as a single large volume. Additional praise is superfluous in view of the above facts.

Although apparently little change can be noted in the 1747 pages, adroit insertion of a and b numbers has accommodated 104 corrections, alterations and additions. These latter include some 15 of one or several paragraphs and there are very numerous additions to the references in the different sections. A considerable amount of information derived from the vast experience of the armed forces is included although perhaps not as much as might have been expected, had hostilities ceased at the time of publication.

Some of the diseases given addition treatment are malaria, bacillary dysentery, plague, the rickettsial diseases, Oroya fever, climatic bubo and filariasis.

Although workers in special fields may not agree with all aspects of this work, it remains the finest reference work on the subject.

It is also to be hoped that at a not too distant date another edition, including the results of the experiences of the medical corps in all the diverse theatres of war, will be forthcoming.

A. J. Walker, M. D.

Mitchell-Nelson Textbook of Pediatrics: Edited by Waldo E. Nelson, M. D., Philadelphia, W. B. Saunders Co., 1945, Pp. 1350. Price $10.00.

Dr. Waldo Nelson, Professor of Pediatrics at Temple University School of Medicine, together with forty-nine outstanding contributors, has made many improvements in this ever-popular textbook of pediatrics. The fourth edition certainly fulfills all expectations for excellence which preceded its appearance.

Changes in the size and type of the book and in page and section organization are all gratifying. Lucid practical explanations of specific, supportive and symptomatic treatment plans are particularly attractive. A new, well-chosen, and well organized bibliography is included for each subject; this had been omitted from the third edition, and its return will be most welcome to all. The illustrations are excellent; photographs and x-ray reproductions are very clear. Many useful charts and graphs are suitably interposed throughout the book. The inclusion of a chapter dealing with specific problems of the adolescent child certainly meets a real need, though such a praiseworthy addition probably should be amplified and have a more prominent place than it does in the present volume.

Although it is always difficult to judge the excellence of indexing in any volume before using it for several months, this one seems unusually complete. A short appendix contains tables of normal blood values, nutritional requirements, conversion factors and references to data similarly presented in the text. Dr. Nelson certainly deserves the hearty congratulations of all physicians interested in children for the preparation of such a masterful volume.

Certainly, as the editor states in his preface, "the book has been completely rewritten and to all intents and purposes it is a 'new' book"; the reviewer has no hesitancy in recommending this text to students and practitioners alike.

R. V. Platou, M. D.

The Care of the Neurosurgical Patient: By Ernest Sachs, A. B., M. D., St. Louis, The C. V. Mosby Co., 1945, Pp. 268, 177 Illustrations. Price $6.00.

In this small volume Sachs has admirably achieved his purpose of describing "the details necessary for the adequate care of the neurosurgical patient." Based on information accumulated through years of experience, an abundance of material unfolds in an orderly fashion from the first chapter on the preoperative examination to the last one on a review of neurological surgery and a glimpse into its future. Sandwiched between these are discussions of the operating room, anesthesia, neurosurgical methods, typical neurosurgical operations and postoperative care. Sprinkled uniformly throughout the text is a profusion of illustrations, which serves to reiterate its contents. Not only will this book prove instructive to all surgical house officers but it will undoubtedly find its rightful place on the bookshelf of all neurosurgeons.

Dean H. Echols, M. D.

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IN MEMORIAM*

(REMARKS IN MEMORY OF THE LATE STANFORD EMERSON CHAILLÉ)

P. T. TALBOT, M. D.
NEW ORLEANS

Mr. President, distinguished guests, ladies and fellow-members of the New Orleans Parish Medical Society, I deem it a great privilege and quite an honor to have been requested to present on this momentous occasion appropriate remarks in memory of the late Stanford Emerson Chaillé. In accepting this assignment I have done so with a great deal of humility. First, I have had the opportunity of knowing Dr. Chaillé personally, as a student and practitioner of medicine, which resulted in a deep feeling of love and confidence. Second, the accomplishments and contributions of this great man reached such heights as to be beyond my power to add or detract, therefore it is only possible in this limited time to review some of my personal observations of his life and devotion to the medical profession. In the third place, these remarks should be limited and an attempt should not be made to make them all inclusive for fear of omitting some of the most important details of his life.

Many of our members have had the great privilege of knowing Dr. Chaillé personally; however, there are a great number of our young physicians who have not enjoyed that privilege. The latter group could obtain a great deal of knowledge of this great man by reading the voluminous contributions he has made to medicine occurring in the medical literature. This is replete with his writings not only in relation to scientific and therapeutic medicine but also with reference to his energy and activity in perfecting high ideals and standards in the practice of medicine. The fruits of his work in this regard we are reaping today. As we all know, Dr. Chaillé was a great teacher, a wonderful professor and a lovable dean, but we should also know that although these functions were very dear to his heart, he gave actively of his mind and energy to the perfection of laws and standards which would forever keep medicine on a firm foundation. In this work he carried with him the spirit of the real pioneer, blazing a trail and making pronouncements far ahead of his time.

He participated most actively in the organization of the Orleans Parish Medical Society and the Louisiana State Medical Society. As an ardent member of these organizations we were fortunate in having him chairman of our legislative committee. He and his co-members and contemporaries succeeded in having placed in the Constitution of the State of Louisiana the proper functions and responsibilities of the State in regard to public health, care of the blind, deaf and dumb, and of patients in our mental institutions. This has never been altered.

It was my great privilege to represent the medical student body of the Tulane Medical School on the twentieth of May, 1908 when there was a public meeting in New Orleans honoring the semi-centennial celebration of his official connecton with the university. I would like to quote a comment on this address of mine because in it I attempted to prophesy and I feel that subsequent developments have warranted such predictions:

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*Delivered at the Twentieth Annual Stanford E. Chaillé Oration and the Orleans Parish Medical Society Memorial Meeting, held Thursday, December 20, 1945.

"Dr. Paul T. Talbot, of the graduating class of 1908, delivered a most creditable address in which a character sketch was drawn of the Dean and teacher from the student's point of view. He analyzed the man in his office, with his peculiarities. He brought out the methods which made the teacher and concluded with an expression of appreciation which detailed the manner in which the confidence and admiration of students had always been obtained in spite of discipline. The side lights of his sympathetic disposition, his ready advice, condolence, or the way in which he would share the burden of a student's heavy heart, met a full review. 'These tributes to him,' said the speaker, 'come spontaneously out of full hearts, accompanied with wishes for many days of future prosperity and happiness. . . . Perchance some day, in the dim and distant future, the mist of time will build about the name of this great educator, a halo that will carry him on to future generations, just as the names of some of his compatriots, long gone, are brought down to us.' "

It also became my privilege and honor to escort Dr. Chaillé to the new domicile of the Orleans Parish Medical Society in May, 1911 when he delivered his last remark to any organized medical group. I believe that every medical man should read in the pages of the New Orleans Medical and Surgical Journal these remarks because they represent a comprehensive recapitulation of most of his activities in relation to organized medicine and especially legislative matters. This last appearance of his did not find him in a spirit of pessimism or cynicism. He still manifested a wonderful sense of humor. To illustrate may I quote one paragraph as follows:

"At last I have become a member of a small, unenviable and degenerating class of the population, the octogenarians, who, as many think, ought to have been earlier transferred to another world. Either to where the wicked cease from troubling and the weary be at rest, in which I often concur; or to where they would have 'a hot time in the old place' not only tonight but every night and every day to eternity, in which I have never concurred. And this reminds me that, at a notable banquet, a well-known bishop interlarded an eloquent after-dinner speech with this story: A preacher warned his congregation that God would surely condemn the wicked to hell-fire, forever, eternally and everlastingly; after the sermon a politician inquired: 'Mr. Preacher, did you say that All-Merciful Father would damn many of His own children forever?' 'Yes, sir!' 'And eternally?' 'Yes, sir!' 'And everlastingly?' 'Yes, sir!" 'Well I tell you, Mr. Preacher, the American People will never stand for it!' "

Here we have seen a man solid in his virtues and likable in his weaknesses, who tried his decent best to be fair and honest in the era in which he lived; that in itself can not be measured by present-day standards. Evidently Longfellow* had in mind such a man when he penned the following:

"The heights by great men reached and
  kept
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward in the night."

Let us remember him in this manner—a great teacher, an astute scientist, a lovable dean. He had a great yearning to work, strive and live and was able to spread out his abilities in every direction for advancement and stabilization of our great profession. He contributed handsomely toward keeping American medicine truly American. With these fundamentals he thus worked, strove and labored to sow seed for the future in order that medicine and medical organizations today could reap the benefits of his devoted efforts. We can take from the pages of his vast medical contributions to medicine and especially to organized medicine, much which will serve to energize and activate our work today in this ever changing and chaotic world. We may therefore profit greatly by applying his contributions and efforts to present day needs as so aptly expressed by Lincoln in his Gettysburg Address:

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*The Ladder of St. Augustine.

"It is rather for us to be here dedicated to the great task remaining before us, that from these honored dead, we take increased devotion to that cause, for which they gave their last full measure of devotion."

During his day he fought for the progress of medicine; the high ideals and standardization of medical education to make it possible to have the highest type of medical practice available to the people of his state. We are now, as medical men, engaged in opposing, from a national viewpoint many issues, testing whether our standards of American medicine can long endure. In those days he carried the torch for free enterprise of the medical profession. Today we are involved with the same principles, only in a larger and a national viewpoint. Were he living today, there would be no question in our minds but that he would be at the front along with those who are trying to preserve the American way of the practice of medicine. So let us say:

"To that high Capitol where Kingly Death
Keeps his pale court in beauty and decay,
He came; and bought with price of purest
  breath
A grave among the Eternal."

In order that we may become "Chaillé conscious" I am diverting from the usual procedure on such occasions and wish to show some photographs representing, in a pictorial way, the man whose memory we honor tonight.

For most of these contributions I am indebted to Miss Mary Louise Marshall, Librarian of the Orleans Parish Medical Society and Tulane University libraries and to Dr. Chaillé Jamison and family.

OPERATIVE INJURY TO COMMON DUCT: IMMEDIATE REPAIR

CASE REPORT

URBAN MAES, M. D.
NEW ORLEANS

CASE REPORT

Mr. L. H. A., aged 56, was chief engineer on a steamship. He had been having vague pain in the upper right quadrant over a period of 20 years. However, in the last two years he had been having frequent "attacks" of pain, which lasted three to four hours and radiated to the scapular region. His abdomen remained tender to touch for three or four days after each attack. The rest of his story was irrelevant, except that he has occasional attacks of asthma, especially in a closed room. He had influenza in 1918 and had pneumonia in 1925 and again in 1932.

His physical examination was essentially negative. He was a slightly plethoric individual, also a little obese.

The patient had been treated in the Marine Hospital, where his story was the same as above. X-ray pictures showed a nonfunctioning gallbladder on one occasion and later, with the intravenous use of dye, some concentration in the gallbladder was demonstrated, and several large opaque shadows were seen.

The patient consulted me at my office and had his pictures and report with him, which left no doubt as to the diagnosis. He was admitted to Touro Infirmary on August 23, 1945, and was operated upon the following morning, August 24, 1945, when the following operative note was made.

"The gallbladder was exposed through a high right rectus incision. The gallbladder was very much elongated and curved due to many adhesions to the duodenum. These were separated and when the gallbladder was completely freed, what was thought to be the cystic duct and the cystic artery were ligated. The gallbladder, containing several large stones, was removed from below upward, and a running stitch started in the gallbladder bed. As the gallbladder was removed, the bed was sutured with the running stitch. When the gallbladder had been completely removed, it was noticed that some bile was welling up from below. Further investigation revealed that the bile was coming from the divided end of the common duct, which had been mistaken for the cystic. The two ends were identified and a close suture could not be done without too much tension. Bridging the gap with a vitallium tube was attempted, but the only tubes available were too large. A piece of rubber catheter was used, and several silk sutures were placed to approximate the duct ends over the section of rubber catheter. Three small Penrose tubes were placed near the suture line, and some omentum was tucked into the fossa."

For several days bile drained around the Penrose tubing, and on the third postoperative day, the patient had a brown stool, which continued daily. He became jaundiced and his icterus index rose to 60 on the fifth postoperative day. Jaundice gradually decreased, and the icterus index fell to 15 on the twelfth day. The Penrose tubing was removed on the seventh day. Temperature rose to 101° on the second day and remained elevated for three days, then reached normal and remained so during the entire convalescence.

The patient reported to me four days ago and seemed well and happy. It will be interesting to note if the rubber tube ever does become obliterated or if it will pass into the intestine as has happened on one former occasion when a cholecystenterostomy was done over a piece of rubber tubing.

COMMENT

It must happen to most of us who do much gallbladder surgery to injure the common duct on occasion, and while a free exposure and identification of the ducts will save many such accidents, there are occasions when it is not easy to identify the structures at the apex of the gallbladder. When such accidents happen, as in the patient whose story has just been related, we naturally wonder what changes in procedure could prevent such unfortunate accidents. Some surgeons remove the gallbladder from the fundus to the apex after emptying the organ of its content. This procedure has always seemed to me to be more bloody and there was more soiling from spilling of infectious gallbladder content. In such instances drainage after operation with its attendant risk of postoperative hernia is a consideration. In most instances when the gallbladder is removed from the apex to fundus a cleaner operation can be done and complete closure of the abdominal wound is the rule. In the instance related it would have been better to use the fundus to apex procedure or the equally valuable suggestion made independently and almost simultaneously by the late E. D. Martin of this city and by W. D. Gatch of Indianapolis, which was to ream out or destroy the mucous membrane of the gallbladder. Subsequently Tinker suggested destruction of the mucous membrane by the electro-surgical unit.

The first comprehensive report on injuries of the common bile duct in the course of operations on the gallbladder and extrahepatic biliary passages was made by W. J. Mayo[1] in 1905. In this report, which covered 1100 operations on the gallbladder and bile passages up to March 27, 1905, injury to the common duct with loss of continuity occurred in seven instances. However, in only two of these was the injury accidental. In the other five the removal of a portion of the common duct was deliberate during the course of an operation for malignant disease. Several methods of repair were suggested in that article, but all were a direct suture of the duct. The one avoidable death was one in which a gauze pack had been used. When the pack was removed, the suture line was disturbed with the subsequent unfortunate outcome.

While this presentation is intended only as a case report with some suggestions as to how to keep out of trouble, I cannot fail to call your attention to some of the outstanding contributions to the subject that have appeared in the literature. The greatest warning which sticks in my memory was the anatomical study of Eisendrath[4] in 1920. He had studied variations in the ducts and in the cystic artery. I believe that I can summarize this classical contribution by the statement that ample room and accurate well-visualized anatomic exposure should be the prime necessities in all cases. Later reports by Sir James Walton[3] and a more recent paper by Arthur Allen[2] stress the same points and have pertinent suggestions as to various methods of repair, which vary all the way from reconstruction by graft and artificial aids to choledochoduodenostomy. Allen states that rubber and vitallium tubes usually become encrusted and block, whereas Walton has seen the rubber tube give lasting good results. What is ahead for my patient only time will tell.

One passing word, however, as to drains and the use of the T-tube. As already mentioned, a gauze drain was the cause of serious trouble in one of W. J. Mayo's patients. I think some external escape should be provided, and the Penrose tube does not adhere, and, if properly used, should give very little trouble. The use of the T-tube might seem desirable, but I have had my troubles with the T-tube and hesitate to use it except in the cases in which there is only a lateral or partial injury to the duct. Of course, if the gallbladder has not been removed, a cholecystenterostomy may save much worry, but unfortunately, injury to the common duct occurs most often during removal of the gallbladder when it is too late to use this organ.

The papers of both Walton and Allen have excellent bibliographies appended for those who wish to pursue the subject further.

During the time this report was under consideration, a copy of the Jackson Clinic Bulletin was received, and was found to contain another report of an accidental injury to the common hepatic duct. At a second operation biliary drainage was secured by passing a catheter up through the common duct to the junction of the hepatic ducts. This would seem to indicate a high injury to the common duct. A secondary operation five months after the initial injury was very difficult because of dense adhesions, which made the structures hard to identify.

This example emphasizes the well-established observation that chances of successful repair are much better if the injury is recognized at the time of operation. Smith[5] mentions the standard procedures enumerated by Ellsworth[6] in his classical paper on the subject. As these are many and varied, anyone interested should refer to the original paper of Eliot.

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PENETRATING ABDOMINAL WOUNDS*

REPORT OF TWENTY-ONE OPERATED CASES

JOHN F. OAKLEY, M. D.
NEW ORLEANS

In 1,087 casualties received at one shore based Naval activity in the forward area, penetrating abdominal wounds were encountered in 41, or 3.7 per cent. Operation was performed in 21 of these cases, the other 20 were evacuated without operation because the overwhelming number of casualties at that time prevented their receiving prompt treatment. The criteria upon which cases were otherwise selected for operation ashore were: (1) the length of time elapsed from injury to treatment; (2) the degree of recovery from shock; and, (3) the degree of exsanguination present.

The known mortality occurring in the first 96 hours among those subjected to operation was six, or 28.5 per cent. The 15 men surviving operation and evacuated at various periods of their convalescence were in satisfactory condition upon leaving the activity, and subsequent follow-ups indicated their complete recovery.

PATHOLOGY

The type of injury encountered in the operative series was invariably one of injury to the abdominal or thoracic wall, intra-abdominal hemorrhage, and visceral perforation or laceration. The force of the traumatizing agent was frequently sufficient to produce damage of a shocking degree which defies adequate description. These wounds were produced by single rifle or machine gun bullets, bomb fragments, or shell casings. The tissues were torn, pulpified, and invariably contaminated by dirt or clothing. Fragments of metal were frequently lying free in the peritoneal cavity, or embedded in the soft tissues. The liver, when injured, was usually extensively lacerated, and in two instances, free fragments of liver tissue were found. Intestinal perforations were likewise usually multiple, and complete transverse section of the large or small bowel was encountered three times. Table 1 (see next page) shows the time elapsing from injury to treatment, the site of entrance, the visceral injuries sustained, and the known results.

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*Read at scientific meeting of the Orleans Parish Medical Society, November 12, 1945.

SYMPTOMATOLOGY

The occasion for decision as to whether visceral injury had or had not occurred did not arise in this series. It was apparent in every instance that such a state existed. Table 2 shows the frequency of symptoms in the 21 cases considered.

TABLE 2

Symptoms	Number of Cases
Tenderness and board-like rigidity	21
Shock	21
Abdominal pain	15
Right shoulder region pain	6
Low erythrocyte count	21
Low hemoglobin	21
Vomiting	11
Pain on rectal examination	15
Bleeding from rectum	2
Hematemesis	4
Temperature elevation	9
Leukocytosis	9
Urinary suppression	4
Hematuria	2

TREATMENT

Operation was performed as early as the exigencies of the situation permitted. A routine plan of therapy was followed as herein described. Shock therapy, instituted in Battalion Aid Stations forward, was continued by adequate doses of morphia and by blood and plasma transfusions. A preliminary x-ray examination of the chest and abdomen was studied for such information as might be obtained. Blood counts and temperature studies were routinely made pending preparation for operation.

Laparotomy was then performed. Spinal anesthesia (150-200 mgm. procaine) was used in 18 cases and ether by open drip method in three. Sodium penthothal (2½ per cent) intravenously or ether was used to supplement spinal anesthesia in three cases each. All patients who had partially recovered from shock tolerated spinal anesthesia well and there were no unusual instances of syncope occurring during operation. Incisions were planned according to the quadrant of the abdomen where greatest damage was suspected. Paramedian incisions were used in 12 cases, an oblique sub-costal in five and a medium sub-umbilical approach in four patients.

After removal of blood and spilled intestinal contents by suction and sponging, control of gross hemorrhage was performed by ligature or tamponade. A systematic examination of all the abdominal contents was then carried out. If perforations were single, they were closed by a purse-string suture of No. 00 chromic intestinal suture, and reinforced by a suture of No. 50 cotton. If multiple perforations of the bowel at close intervals were found, or if the blood supply of a loop was endangered, a resection followed by an aseptic end to end anastomosis was performed.

Lacerations of the liver were repaired by No. 2 chromic catgut, introduced mattress fashion, on large blunt needles. Pieces of the rectus muscle were used to incorporate in these sutures further to aid hemostasis. In two instances out of the six cases showing extensive injury to the liver, suture was not possible and bleeding had to be controlled by tamponade. These cases were invariably drained by counter incision in the right flank.

No attempt to suture the spleen was made, and where this organ was found to be injured, it was removed.

Retroperitoneal hemorrhages were usually left undisturbed. In one instance it was apparent that the kidney had been extensively lacerated and it was removed anteriorly through the defect in the posterior peritoneum.

Injuries of the large bowel were closed transversely and where damage to a segment was extensive, this portion was exteriorized through an inguinal colostomy or a cecostomy decompression was performed. Drainage of the abdomen was not usually done in this series.

Injuries of the urinary bladder were

closed by fine chromic catgut sutures, and suprapubic drainage instituted.

Before closure of the abdomen, five to ten grams of micro-crystalline sulfathiazole was introduced into the peritoneal cavity. The abdominal wound was closed in layers, using chromic catgut of various sizes. Due to the invariability of infection of abdominal wounds in injuries of the large bowel, the peritoneum was closed in these cases, and the muscular and aponeurotic layers were closed by interrupted heavy dermal sutures which were tied loosely over vaseline gauze drains and secondary closure subsequently done. Wounds of entrance and exit were finally debrided and left open unless large enough to permit evisceration, n which case they were closed by suture, and rubber tissue drains inserted.

POSTOPERATIVE TREATMENT

A definite routine was followed in the postoperative care of these cases, and is outlined as follows:

(1). Whole blood, plasma, and saline nfusions totaling 5,000 c.c. of fluids parenterally daily.

(2). Wagensteen decompression was begun immediately and continued until resumption of normal peristalsis.

(3). Morphine, gr. ¼ at four hour intervals, if respirations were not lower than 10 per minute.

(4). Oxygen by Boothby mask.

(5). Sulfa therapy intravenously.

(6). Penicillin, (25,000 units), intramuscularly, every four hours.

(7). Gas gangrene antitoxin (prophylactic dose).

(8). Prostigmin (1-2000) 1.0 c.c. every six hours.

CONCLUSION

Surgery of the type described in the foregoing series is difficult of execution, and admittedly lacking in frills. Inasmuch as a mortality of nearly 100 per cent may be anticipated if exploration is not afforded, the problem of penetrating abdominal injuries demanded that these cases receive early care. It is believed that early operation and the use of penicillin and sulfa therapy contributed materially toward the relatively low mortality following this type of injury. No unfavorable results were observed from the intraperitoneal use of the sulfonamides in this series.

TABLE 1

No.	Interval From Injury To Treatment	Wound of Entrance	Visceral Injury And Number Of Perforations	Hours Retained Post-Operatively	Result
1.	10 hours	Right sub-umbilical	Ileum (22) Omentum Descending colon (2) Mesocolon	1 hour	Died
2.	7 hours	Left hypo-chondrium	Splenic flexure colon (1) Jejunum (2) Gastro-colic omentum	2 hours	Died
3.	5 hours	Left iliac area	Ileum (18) Sigmoid (1) Mesosigmoid	60 hours	Evacuated
4.	3 hours	Right loin	Ascending colon (1) Retroperitoneal hematoma	72 hours	Evacuated
5.	4 hours	10th right I. S.	Right lobe of liver	76 hours	Evacuated

6.	4 hours	10th right I. S.	Liver Stomach (1) (Pylorus) Duodenum (1) (cap) Jejunum (2) Gastro-colic omentum	16 hours	Died
7.	8 hours	11th I. S. Left anterior axillary line	Transverse colon (2) Ileum (4) Mesosigmoid Retroperitoneal hematoma	20 hours	Evacuated
8.	6 hours	Right lower quadrant	Ascending colon (3)	30 hours	Evacuated
9.	5 hours	9th left I. S.	Spleen Diaphragm Left kidney	26 hours	Evacuated
10.	3 hours	Mid line below umbilicus	Ileum (2) Retroperitoneal hematoma	96 hours	Evacuated
11.	10 hours	10th left I. S.	Spleen Diaphragm	40 hours	Evacuated
12.	4 hours	Perineum and left posterior iliac	Ileum (8) Sigmoid (2) Bladder (1) Rectum (1)	36 hours	Evacuated
13.	5½ hours	10th right I. S.	Liver Retroperitoneum	72 hours	Evacuated
14.	5 hours	Right axilla, 10th I. S.	Liver (multiple lacerations) Right kidney	50 hours	Died
15.	6½ hours	Right hypochondrium	Liver Retroperitoneal hematoma	38 hours	Evacuated
16.	4½ hours	Right para-umbilical	Jejunum (4) Transverse colon (2) Mesenteric and retroperitoneal hematoma	31 hours	Evacuated
17.	3 hours	Left thorax, 11-12th I. S.	Stomach (1) Transverse colon (several) Ileum (16)	2 hours	Died
18.	10 hours	Right upper quadrant	Liver (right lobe) Stomach (2) Ascending colon (1)	16 hours	Evacuated
19.	2 hours	Left upper thigh	Rectum (1) Retroperitoneal hematoma	22 hours	Evacuated
20.	2½ hours	Left buttock	Urinary bladder	5 days	Evacuated
21.	4 hours	Right flank	Ascending colon (1) Cecum (1) Ileum (5) Mesentery of small bowel (1) Rectum and sigmoid (4) Retroperitoneal hematoma	14 hours	Died

PENICILLIN IN TETANUS

REPORT OF TOXIC REACTIONS FOLLOWING ITS USE IN TWO OTHER CASES[*]

C. J. TRIPOLI, M. D.[†]
NEW ORLEANS

The advent of penicillin for the treatment of bacterial infections is undoubtedly one of the most important advances in chemotherapy. In view of the high mortality of tetanus[1], even with specific serum therapy, the successful use of penicillin against pathogenic clostridia,[2, 3, 4] including the tetanus-tetanomorphum group, is encouraging. However, Altemeier[5] reports a study of 16 cases of established generalized tetanus that have failed to have any beneficial response to penicillin, except in the treatment of the complications.

The paucity of reports of recovery from tetanus following penicillin suggests that this report of a case of eight days' duration would be of interest.

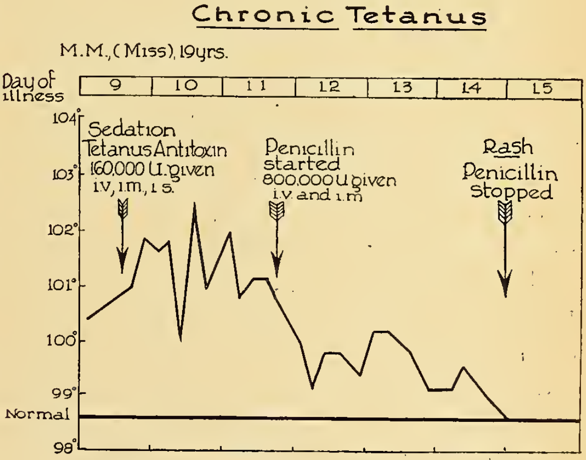
CASE No. 1

A white girl, single, aged 19 years was admitted to Touro Infirmary, service of Dr. B. J. DeLaureal, October 24, 1945. She complained of pain and stiffness of the jaws which were so tightly locked together that considerable effort on the part of both patient and examiner were required to effect a slight separation. There was pain and stiffness of all the skeletal muscles and moderate rigidity of the neck. Two months previously patient was told by her dentist that she had impacted wisdom teeth. Eight days before admission her jaws began to get stiff and gradually increased until she was unable to open her mouth and was forced to take liquid nourishment through a straw. Three days before admission her jaws were forced open by her dentist and the wisdom teeth extracted. The jaws remained tightly closed afterward. The muscular stiffness progressed to board-like rigidity, especially the muscles of the back and abdomen. A mild fever developed and continued until admission. No convulsions occurred. No definite history of trauma could be elicited before the onset, eight days previously, except that in the past, the patient would accidentally bite her tongue at frequent intervals while chewing food. No known previous tetanus immunization had ever been received.

On admission the patient lay quietly in bed, apparently oriented and answered questions through clenched teeth. Her development was excellent but nutrition was poor. The temperature was 100.5° F., pulse rate 85 per minute, respiratory rate 24 per minute, blood pressure 136/82 mm. mercury. Pupils were equal and reacted to light and accommodation. Extremity reflexes were present and equal. The remainder of the physical examination revealed no significant abnormalities, except the marked trismus, posterior cervical and generalized muscular rigidity and characteristic board-like abdominal rigidity.

Laboratory examination of the urine revealed the specific gravity to be 1.020 and no albumin nor sugar. Microscopic examination revealed a few pus and epithelial cells but no red blood cells. Hematologic study revealed the red blood cell count to be four million per cm. and the hemoglobin to be 81.2 per cent. The white blood count was 5,200/cm. with 70 per cent neutrophils, 27 per cent small lymphocytes, and 3 per cent large lymphocytes. The non-protein nitrogen was 28 mgs./100 c.c. and blood sugar 100 mgs./100 c.c. Spinal fluid survey showed the pressure to be 170 mm. water with normal response to jugular pressure and respiration. Removal of 8 c.c. of fluid resulted in a terminal pressure of 100 mm. water. The cell count was one lymphocyte. The globulin was negative. Wassermann and colloidal gold tests were negative. Bacteriologic studies by smear and culture revealed no micro-organisms.

CHART 1



A diagnosis of chronic tetanus of eight days' duration was made and therapy was instituted, consisting of adequate sedation and tetanus antitoxin. An initial dose of sodium amytal 0.5 gm. given intravenously and chloral hydrate 0.5 gm. orally every three to four hours, combined with 0.1 gm. of codeine sulfate occasionally, was sufficient for relief of pain. Tetanus antitoxin was given intramuscularly, intravenously, and intraspinally, amounting to 160,000 units the first two days and an additional 10,000 units on the third day. During this time the clinical picture remained essentially the same. At the request of Dr. DeLaureal, I was privileged to examine the patient. Penicillin administration was considered and on the evening of the third hospital day, a total dosage of 180,000 units was then begun and given intravenously, and intramuscularly throughout the next four days. At the end of this time a severe urticaria, as commonly seen following serum administration, developed and, although most probably due to the serum alone, all specific therapy was discontinued. Following the institution of penicillin, the fever began to subside and a gradual improvement occurred during the subsequent four days and continued after all treatment was stopped. The patient was discharged from the hospital a week later, November 8, 1945, as recovered and has since remained well.

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[*] Read at Scientific meeting of the Orleans Parish Medical Society, December 10, 1945.

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TOXIC REACTIONS

Clinical experience with penicillin has demonstrated that its use is not attended by many serious toxic reactions. There is no direct evidence of any serious disturbance in the hematopoietic system or peripheral blood, following the use of penicillin. In fact, penicillin has been successfully used in the presence of severe anemia, leukopenia and even complete agranulocytosis.[2]

However, reactions[6] to penicillin have been reported varying from urticaria,[7] chills, fever, headache, flushing, faintness, eosinophilia, thrombophlebitis[3], gastro-intestinal reactions,[8, 9] contact dermatitis,[10, 11] vesicular dermatitis,[12] and bullous dermatitis.[13] These reactions have been attributed either to penicillin itself or to certain substances, apparently toxic impurities, present in different lots.

The following cases showed apparent reactions consisting of fever and general toxemia during or immediately following the use of penicillin. Since both of these cases occurred in the same hospital, at about the same time, it could be assumed that the penicillin, in both cases, which was from the same manufacturer, was also from the same batch or lot. Furthermore, it would seem that the similar reactions were due to some pyrogenic factor or toxic substance present during the manufacture of this particular batch, rather than from the penicillin as such, since these reactions are very unusual.

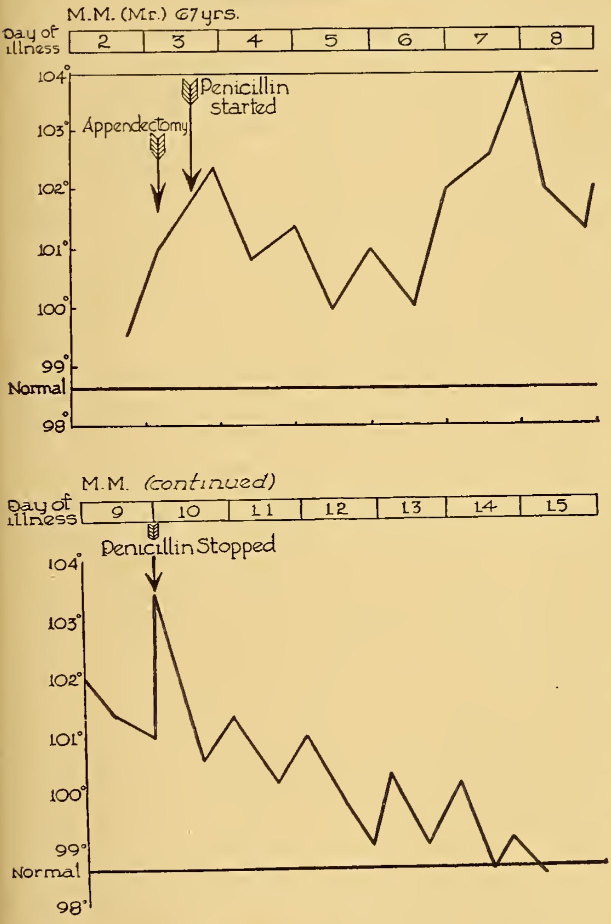
CASE No. 2

A white man, aged 67 years, was admitted to Hotel Dieu, service of Dr. J. C. Menendez, October 14, 1945. He complained of generalized abdominal pain, most marked in the epigastrium radiating toward the right lower quadrant, since the day before. Nausea was present, but no vomiting, constipation or diarrhea. Slight dysuria was present. He had been treated for the past several years for heart disease, having recurrent mild dependent edema. Diabetes mellitus has been present for the last few years but he has not taken insulin.

Physical examination revealed a well developed, moderately obese individual apparently not acutely ill or severely toxic. The temperature was 99.5° F., pulse rate 85 per minute, regular, respiratory rate 28 per minute, blood pressure 150/96 mm. mercury. Examination of the abdomen revealed moderate tenderness in the epigastrium and moderate tenderness and rigidity over the right middle and lower quadrant of the abdomen. The remainder of the physical examination except for generalized arteriosclerosis revealed no gross pathological lesions. Laboratory examination of the urine revealed the specific gravity to be 1.019. Sugar reaction was 1+; but no albumin was present. No acetone was present. Microscopic examination revealed a few pus and epithelial cells and the presence of both fine and coarse granular casts in moderate numbers. The red blood count was four and one-quarter million per cu. mm., hemoglobin 80 per cent. The total white blood count was 10,800/cu. mm., neutrophils 80 per cent, lymphocytes 16 per cent, monocytes 3 per cent, basophils 1 per cent. The bleeding time was two minutes. The coagulation time was three and one-half minutes. The sedimentation rate was 19 mm. in 60 minutes. The non-protein nitrogen of the blood was 46 mgs./100 c.c., and the blood glucose was 190 mgs./100 c.c. The blood serology was negative. Roentgenographic chest study revealed the heart to be apparently enlarged and the aorta widened; moderately thickened pleura over right diaphragm, otherwise negative. Electrocardiogram was definitely abnormal but no evidence of infarction. Spinal fluid survey revealed normal pressure findings and the cell count was 2 lymphocytes. The Wassermann tests and colloidal gold curves were negative.

CHART 2

Diabetes Mellitus, Hypertensive and Arteriosclerotic Heart disease. Mesenteric thrombosis vs Acidosis vs Acute Appendicitis



A diagnosis of subacute and obstructive appendicitis was made. After proper preparation and diabetic control appendectomy was performed under spinal anesthesia the following morning. The pathologic findings were in general agreement with the preoperative diagnosis. His immediate postoperative course was not very unusual except for a rise in fever to 102° F. Penicillin, intramuscularly, was given in routine manner in anticipation of bacterial complications, so common in this type of case. At the request of Dr. Menendez I examined this patient at this time. The fever persisted with slight remissions between 101° F. and 103° F. The general condition of the patient was fair. He was not very toxic at any time, except for fever, moderate to severe abdominal distention, which was controlled by gastric suction and the insertion of a rectal tube. The diabetes was satisfactorily controlled by insulin, fluids and glucose orally and parenterally. Repeated physical examinations, blood counts, urinalysis, and x-ray of the chest revealed no apparent cause of the fever. Finally, on the eighth day after admission and seven days after receiving the penicillin (total dose — 1,680,000 units) it was discontinued as the probable cause of the persistent fever. The patient's temperature began to subside and during the next three days returned to normal. The patient was discharged as recovered on October 27, 1945 and has since remained well.

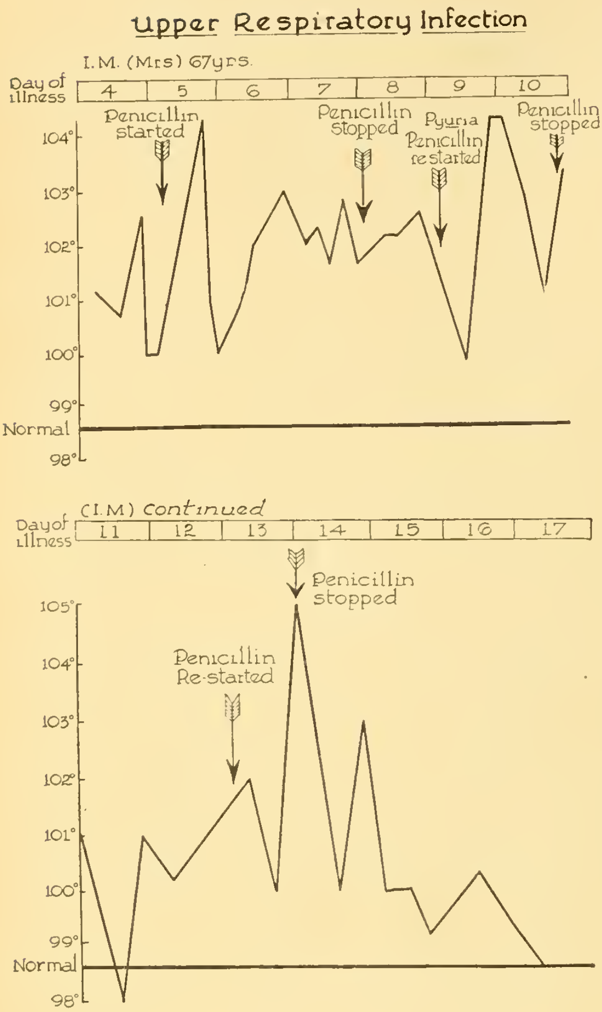
CASE No. 3

A white female, aged 68 years, was admitted to Hotel Dieu, July 26, 1945, because of fever, cough and expectoration of three days' duration. At the onset there was slight fever, cough, expectoration of a small amount of mucopurulent sputum, and congestion of the upper respiratory passages. The symptoms increased in severity, the fever rising to 103° F. since the day before admission. No chill, or chest pain had been present. She stated that she has always been well except that a few years ago she was told she had a chronic appendicitis which apparently has given no trouble since then.

Physical examination revealed a fairly well developed, rather thin individual, not acutely ill. Temperature 101° F.; pulse 100 per minute, regular; respiration 25 per minute; blood pressure 135/70 mm. mercury. The upper respiratory passages revealed a moderate congestion. Examination of the lungs revealed a few scattered coarse rales. No evidence of consolidation could be demonstrated. The remainder of the examination was essentially within normal limits except for mild tenderness over the lower abdomen.

Laboratory examination of the blood showed the red blood count to be four and one-half million per cu. mm.; hemoglobin 85 per cent. The white blood count was 5,750/cu.mm. with 80 per cent neutrophils, 20 per cent lymphocytes. Blood nonprotein nitrogen was 30 mg./100 c.c. and glucose 105 mg./100 c.c. Blood serology was negative. Septic and typhoid blood cultures were negative. Agglutinations for typhoid group, tularemia, typhus, and brucellosis were negative. Icterus index was 10. The urine showed a specific gravity of 1.021, no albumin nor sugar. Microscopic examination revealed a few pus and epithelial cells but no casts. Intravenous P.S.P., renal function test,. resulted in 35 per cent excretion over a two hour period. Culture of the urine was negative for Eberthella and Salmonella group. Stool culture was negative for members of typhoid, paratyphoid of *B. dysenteriae* group. Sputum examination revealed no acid fast organisms. X-ray of the chest revealed the heart and aorta to be normal. Minimal fibrotic changes right apex, generalized lung markings, more marked at both bases. No evidence of active pathologic lesions seen.

CHART 3



In addition to routine measures and codeine and aspirin, the patient was given penicillin intramuscularly for the next three days, July 26-29, 1946, (total 720,000 units). Her general condition did not improve, but instead she became more toxic, periodically disoriented, average fever 102.5° F., refused fluids, necessitating parenteral fluid administration to maintain clinical water balance. Penicillin was discontinued (July 30, 1945) and slight clinical improvement ensued. Two days later, because of dysuria with mild pyuria, penicillin was reinstituted. Her condition became worse the next 48 hours and the penicillin was again discontinued. Clinical improvement followed for the next two days and the fever subsided. It was apparent that the patient was reacting unfavorably to penicillin and it was decided to repeat a 24 hour test period of penicillin intramuscularly. Following the injections and during the next eighteen hours (August 3, 1945) the patient again became toxic, the fever rising to 105° F., pulse 130 and cyanosis developed. The penicillin injections were stopped. Oxygen, glucose and coramine were given and after 12 hours the reaction subsided. Clinical improvement continued, she was allowed up and about August 9, 1945 and discharged August 13, 1945. She has since remained well. Subsequent skin tests for sensitivity to penicillin and fungus extracts have been negative.

SUMMARY AND CONCLUSION

A case of clinical chronic tetanus of eight days' duration with recovery following specific antitoxin and penicillin is recorded.

The severe urticaria may have been due to either specific antitoxin, as commonly seen, or penicillin or both.

Two other cases of toxic effects following penicillin are recorded.

Whether the reactions are due to penicillin itself or some noxious agent present resulting from manufacture of certain batches has not been definitely determined.

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CARCINOMA OF BARTHOLIN'S GLAND

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New Orleans

Bartholin's gland, while a part of the vulva, is nevertheless a distinct encapsulated structure with a well developed stroma. It is located in a highly vascular area and with the possible exception of the salivary gland, no gland of the body works more intensely or is so frequently subjected to trauma, infection or inflammation as is this gland. In spite of this, judging from the literature, malignancy of this gland is very rare as there are only 75 cases reported up to this time. At the Hotel Dieu there are two cases on record in the past ten years. I have seen only one case in over 25 years.

The first reported case is credited to Kolb in 1864. Since then the literature has been added to by reports of individual cases and all the case histories are in agreement on the following points; namely, that carcinoma of this gland begins as a small hard, painless, nodular mass, freely movable at first, lying deep in the labial fat, and as it progresses it becomes attached to the skin. The lymphatic spread is open to question; it is slow and through the inguino-perineal chain the same as in carcinoma of the vulva. The etiology and age incidence are the same as in other forms of genital malignancy and the histopathology is about equally divided between the squamous cell type and adenocarcinoma. When the malignant process involves the tissues around the duct, the vaginal mucous membrane becomes red and indurated and takes on the appearance of a papillary formation. Subsequent trauma can cause infection and inflammation which accounts for the coexistence of an abscess and a malignant picture.

Mayo and Barber in 1934 reported three cases of carcinoma of this gland in 213 cases of Bartholin cysts and commented on its obviously rare occurrence. For this reason this case is reported.

CASE REPORT

Mrs. A. H. P., a white female, aged 52 years, first consulted me on March 2, 1938. Her complaint at that time was of trouble about her urethra.

P. I.: This developed about a month before consultation and she described it as a running sore which began as a swelling of a gland on the right side of the vulva with extension of the swelling upwards. When she made pressure over this area pus came out of the vagina. She was very much disturbed because this area did not heal.

P. H.: She had had the usual diseases of childhood; influenza several years ago; no serious illness or operations.

M. H.: Menses began at 14 years, were regular; she had change of life uneventfully at 36 years.

Marital History: Married twice; no pregnancies.

P. E.: The general physical examination was negative except for a slight cardiac enlargement. Examination of the external genitals revealed what appeared to be a ruptured Bartholin gland abscess on the right side. The ruptured vaginal area was considerably indurated, crater-like in appearance and fringed with tissue in papillary formation. A small amount of pus exuded from the opening and the smear showed *B. coli.* The right inguinal glands were slightly palpable. Because of the mixed appearance of the affected area a diagnosis of ruptured Bartholin gland abscess and suspected malignancy was made.

Treatment: The patient was admitted to the Hotel Dieu and under ethylene anesthesia a total excision of the gland was done. The "rush" pathologic diagnosis confirmed the suspicision of carcinoma and even though the tumor appeared self contained the operative procedure consisted of a complete dissection of all fat tissue surrounding the gland down to the fossa and included the removal of all of the affected vaginal tissue. Plastic repair and drainage completed the operative procedure.

During her hospital stay radium was applied externally over the affected area for 350 mgm. hours. Her convalesence was uneventful and she was discharged from the hospital ten days after her admission. The pathologic diagnosis was — squamous cell carcinoma — Grade III.

Follow Up: Evidence of inflammatory reaction persisted for several weeks after she left the hospital, with burning, itching and sticking pains complained of at intervals. This subsided at the end of two months and she felt perfectly well. A little over a year later, examination made during a routine visit revealed some redness and cracking of the tissues at the site of the old lesion. As a precautionary measure she was given 150 mgm. hours of radium. Since then she has been seen regularly once a year. She feels well and has remained well. Her last examination on December 6, 1945 confirms this. More than seven years have elapsed since her operation.

CONCLUSIONS

1. Carcinoma of Bartholin's gland is a rare occurrence. It is slow growing, self contained in its early stages and metastasizes very slowly.

2. The etiology and age incidence are the

same as in other forms of genital malignancy.

3. The histopathology is about equally divided between the squamous cell type and adenocarcinoma.

4. Trauma of the indurated vaginal mucosa probably accounts for the co-existence of an abscess and a malignant picture.

5. All cases of Bartholin cyst and abscess should be carefully scrutinized for possible malignancy.

6. The treatment consists of a careful dissection and excision of the gland and adjacent tissues with immediate irradiation.

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SOME INTERESTING OBSERVATIONS IN ROUTINE PREGNANCY STUDIES

L. A. FORTIER, M. D.
T. T. GATELY, M. D.
AND
P. A. KIBBE, M. D.
NEW ORLEANS

Since 1936 we have been making x-ray pelvimetry studies to determine the feasibility of normal labor. While there are several methods available, we have consistently made use of the one developed by Ball and Marchbank. This requires the making of A. P. and lateral views of the pelvis. The skull is measured in both views and the mean volume computed. The maternal pelvis is measured in the superior straight and bi-ischial planes. The volume from diameter is calculated in centimeters. It is the opinion of the originators of the method that the skull can be as much as 200 c.c. in volume larger than the volume of smallest diameter of the pelvis and still normal labor is possible. The molding of the skull makes this feasible.

As two films are required in two planes much information is obtained. The size and type of maternal pelvis as well as the presence of bone or joint lesions in this region are easily seen. In our practice, contracted pelves have been indeed rare. Relative to the fetus, one can state the number, position, size and probable term.

Our greatest interest in this paper will be centered upon the fetus with abnormalities as seen *in utero*.

CASE No. 1

The films of Mrs. H., para I, showed marked enlargement of the head which measures 1118 c.c. in volume from circumference and was in marked disproportion in relationship to the remainder of the body. There was no chance for normal delivery and cesarean section was performed. The baby died approximately 15 days after birth.

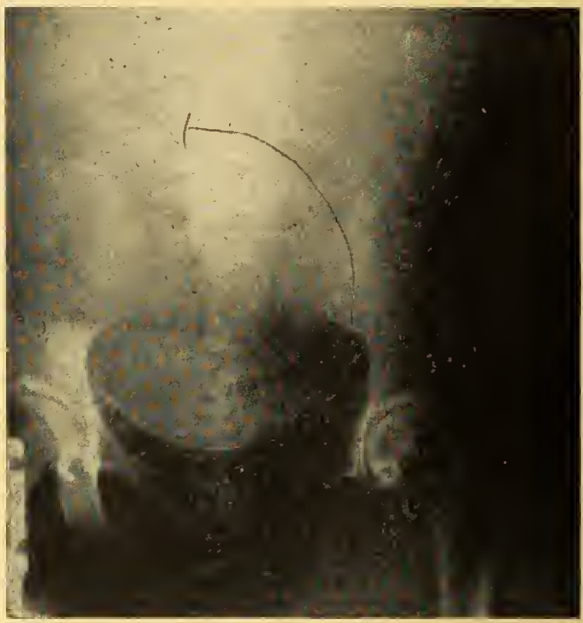

Fig. 1: Hydrocephalus in utero.

CASE No. 2

The x-ray films of Mrs. A., para IV, showed a near term fetus of the anencephalic monster type. In these cases the brain is absent and the cranial flat bones fall down upon the base which is of normal size. We have observed that the torso and extremities are always very well developed in these cases. Her delivery was normal; fetus was stillborn.

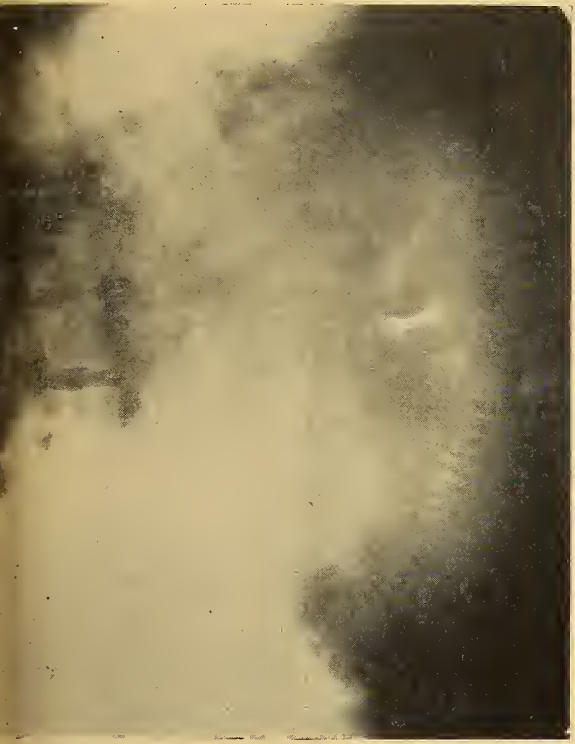

Fig. 2: Anencephalic monster in utero.

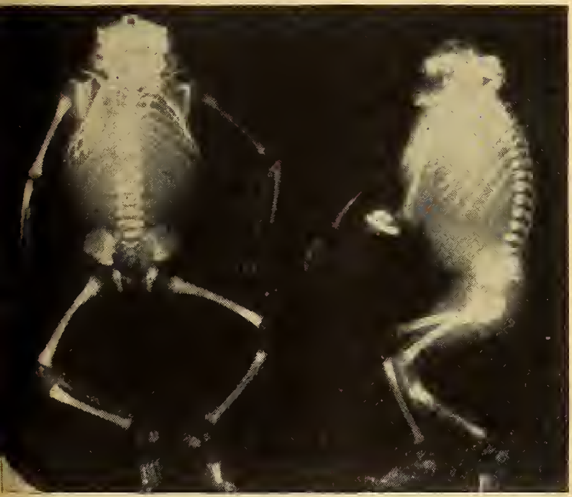

Fig. 3. Two views of stillborn anencephalic monster.

CASE No. 3

The x-ray films of Mrs. B., para II, showed a full term fetus in vertex presentation. In this case it was noticed that there was marked angulation with bony defect in the lower lumbar spine. Her measurements and delivery were normal. Physical examination of the child showed spina bifida in the lumbar region. The sac ruptured and infection caused spinal meningitis. The patient died after leaving the hospital.

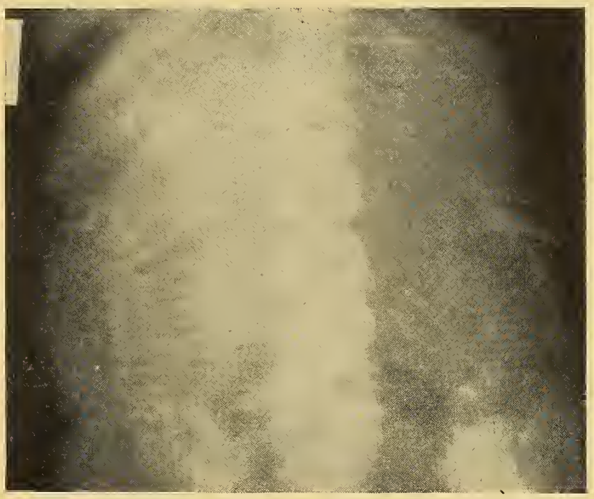

Fig. 4: Note filling defect and marked kyphosis.

CASE No. 4

The examination of Mrs. D., para X (three of whom were dead) was not a routine one but it is so interesting we will include it in this paper. Many examinations were made of this patient in which the fetal bones were extremely hard to demonstrate. She had symptoms of toxemia of pregnancy with cardiac and renal changes. The only fetal bones seen, and these were indistinct, were those of the spine. At no time could the head or bones of the extremities be seen. After multiple consultations cesarean section was done but the fetus was dead. Films made of the stillborn fetus showed typical changes of osteogenesis imperfecta. We do not claim to have made this diagnosis predelivery, nor have we heard of its being previously

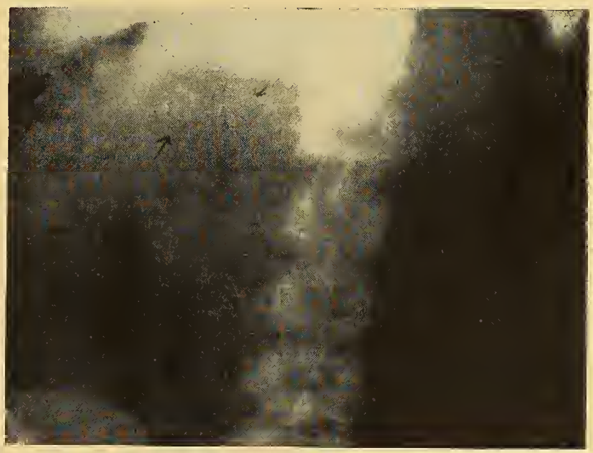

Fig. 5: View in utero showing fetal spine only.

done. However, if after multiple examinations of pregnancy we do not see a skull or the extremities, we will certainly suggest the possibility of this condition.

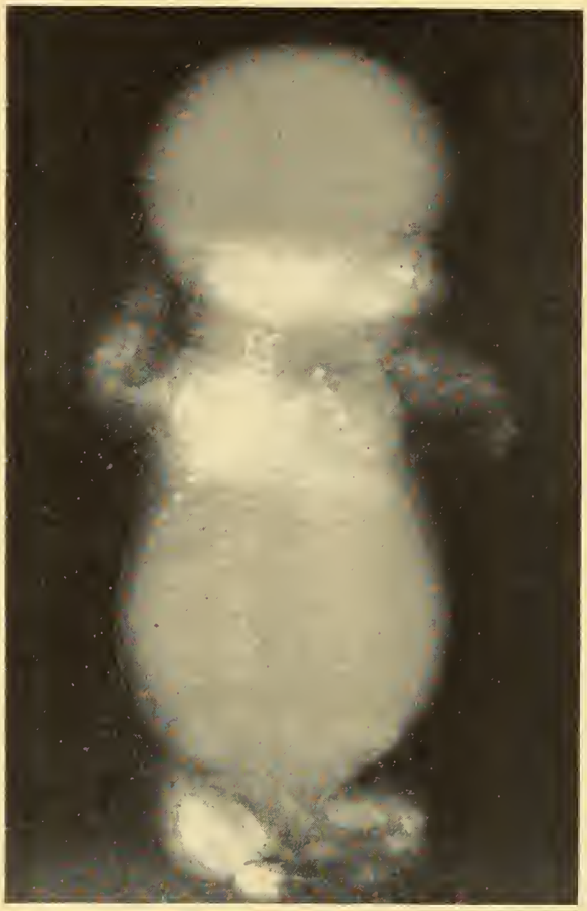

Fig. 6: Fetus after stillbirth delivery. Note multiple fractures and lack of calcification.

CONCLUSION

We wish to state that x-ray pelvimetry studies are extremely popular among the members of our staff doing obstetrics. Almost no primiparas are delivered without the benefit of this study.

WEIL'S DISEASE

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and
M. L. JARRELL, M. D.†
NEW ORLEANS

We wish to record the following case history because it demonstrates several unusual features in Weil's disease.

CASE REPORT

R. F., a white male, aged 22, a fisherman from Des Allemands, Louisiana, came into Charity Hospital on August 5, 1945 with a chief complaint of nausea, vomiting, jaundice, fever, headaches and backache. He stated that one week prior to admission he suddenly developed fever 104°, a chilly sensation and a frontal headache followed by nausea, vomiting, and prostration. Twenty-four hours after the onset the temperature rose to 105° and at this time the patient developed intense pains across the back at the lumbosacral junction. He stated that his temperature diminished to 102 each morning and rose in the afternoon and evening.

Three days after the onset, the symptoms subsided markedly and jaundice became evident and the urine dark. The above symptoms persisted but were much attentuated. In addition, however, epigastric pain developed and persisted.

During the week before admission the patient was unable to retain anything on his stomach, and the jaundice progressed steadily after the onset. No oliguria and no myalgia other than a persistent backache were noted.

As previously stated, the patient is a fisherman who catches fish on trout lines and sells them in Des Allemands. He handles the fish with his hands and his feet get wet frequently. He gave no history of contact with drugs or chemicals known to cause liver damage.

He stated that he had never had a previous episode of jaundice and that he had never been to a doctor in the past.

Physical examination disclosed a temperature of 102.2° F., a pulse of 123, a respiratory rate of 33 per minute and the blood pressure was 110/76.

The patient was a well developed white male who appeared prostrate, acutely ill and unable to lie still due to retching. The skin was markedly jaundiced. There were no petechial or ecchymotic areas. Of particular note was his generalized lymphadenopathy. The enlarged non-tender, non-fixed lymph nodes were particularly evident in both axillae and both groins. The epitrochlear and all cervical nodes were palpable. The nodes varied in size from that of a lima bean to that of a walnut. The sclerae were markedly jaundiced and the conjunctivae were edematous, weeping and angry red.

The ears and nose were not remarkable. There was injection and edema of the pharynx. The nose was negative except for the lymphadenopathy. The lungs were clear to examination and the heart was negative. Examination of the abdomen showed tenderness in the right upper quadrant and the liver was enlarged one finger breadth below the coastal margin. The spleen was not palpable on admission. Rectal examination was negative as vere the genitalia and extremities. The reflexes vere physiological.

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†From the Charity Hospital of Louisiana at New Orleans.

Course in the Hospital: On symptomatic treatnent, there was gradual improvement clinically, nd the temperature subsided by lysis to a low rade curve on the sixth day of hospitalization. Twelve days after the onset of the present illness, he temperature continued to fluctuate daily beween 98.6° and 100.2° until the twenty-first day f hospitalization, at which time he became afebrile. The jaundice progressed up until the thirteenth lay after the onset and then gradually subsided. The spleen became palpable about two weeks after he onset, but the splenomegaly, hepatomegaly and eneralized lymphadenopathy gradually subsided. t no time has the patient had oliguria, myalgia r any evidence of subcutaneous or submucous emorrhages.

Laboratory: On August 5, 1945 the blood picure showed hemoglobin 16.2 gm., red blood cells ,300,000, white blood cells 11,350, with polymorhonuclears 62, monocytes 18, and lymphocytes 20. The prothrombin time was 57 per cent of normal. n August 13 the blood count had not changed emarkably. The heterophile antibody reaction vas negative. Urine on August 15 was orange in olor, acid, with a specific gravity of 1.010; no ugar or acetone was found. Test for bile pignents was positive; urobilinogen was +; there vere 5 red blood cells, 1-2 white blood cells and o casts, per high powered field, centrifuged. The .S.P. test showed 80 per cent dye excretion in the irst hour. The blood urea on August 5 was 27.6; lood cholesterol was 200. On August 9 blood rea was 28.6; on August 16 the serum proteins vere 6.8 gm. per 100 c.c., A/G ratio was 2.08/1; n August 16 blood chlorides were 503; the ephalin flocculation test was 2 to 3 plus. The Van den Bergh reaction on August 5 showed 2.7 direct and on August 11, 15./ direct. Icteric ndices were: August 5, 49.8; August 7, 75; on ugust 11, 95, on August 16, 50; and on August 0, 35.6. Kline and Kolmer serologic tests were egative.

Agglutinations on August 6 for *E. typhi*, *B. melitensis*, *B. abortus*, *Pasteurella tubarensis* and roteus X-18 were all negative. An August 6 the gglutination for leptospira ichterohemorrhagica vas positive 1:300. On August 13 the agglutinations for leptospiro icterohemorrhagica was positive 1:3000. The microscopic technic for this gglutination was used.

DISCUSSION

In light of recent interest in infectious epatitis, this patient showed an interesting problem in differental diagnosis. This disease and Weil's disease are difficult to differentiate clinically. Myalgia, oliguria, nitrogen retention and hemorrhagic tendencies favor the possiblity of Weil's disease. These were lacking in this patient.

Lymph node enlargement is well known in infectious hepatitis. Barker[1] states that one of the most constant and helpful early findings is lymphadenopathy. Typically a soft, slightly tender lima bean sized gland is found along the posterior border of the sternocleidomastoid muscle low in the neck. Lymphadenopathy occurs sufficiently often and in sufficient degree to be considered a characteristic part of the clinical picture.[2] This is not true in Weil's disease.

In the series of 22 cases collected in the Charity Hospital by Chirino[3] only once, excluding our case, has a significant degree of adenopathy been described and this could not be properly evaluated since this patient was known to have tularemia. A search of the literature for descriptions of lymphadenopathy disclosed that it occurred in three of 73 cases reviewed, 4.1 per cent. In only one of these was the lymph node enlargement generalized, occurring in an uncomplicated case of Weil's disease. One of the other two cases showed only a cervical lymphadenopathy and therefore its relation to Weil's disease would be difficult to determine. The third case was that reported by Chirino; it was complicated by tularemia, in which lymphadenopathy is a common finding.

That the adenopathy was a part of the picture of Weil's disease is demonstrated by the combination of the enlargement with the clinical picture pointed out in our case. It therefore appears that lymphadenopathy cannot be used as a point in the clinical differentiation of infectious hepatitis and Weil's disease.

Another disease in which acute symptoms may be associated with hepatitis and generalized lymphadenopathy is infectious mononucleosis.[4] In a series of 123 cases reported by Stevenson and Brown[5] jaundice was noted in 11.3 per cent of the cases. Enlargement of the liver was only found in the cases showing jaundice. The spleen was palpable in six patients with the acute variety, but not in the chronic type. Jaundice with only slight tinging of the sclera occurred in seven cases, 5.6 per cent; deep jaundice of the skin and sclera developed as a transient feature in one acute case. In six patients, 4.8 per cent, intense jaundice was the main characteristic of the illness.[5] The incidence of icterus was probably due to compression of the common duct by clusters of enlarged lymph glands.[6] It is of note that adenopathy was present in 71.5 per cent of 123 cases reviewed.[5]

The incidence of jaundice in infectious mononucleosis is low but occurs often enough to be considered in the differential diagnosis. Likewise the intensity of the jaundice in the majority of cases is not likely to be very severe, and is often only transitory.[5] However, fairly deep persistent jaundice does occur as in the case of a 22 year old English sailor reported by Monat—the icterus index was 28.6 on the seventh day, 81.6 on the fifteenth day, 31.5 on the twenty-third day, and 17.1 on the thirty-second day.[6]

SUMMARY

A case of Weil's disease is reported in which lymphadenopathy was a striking part of the clinical picture. The importance of this finding in the differential diagnosis of hepatitis with jaundce is discussed.

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CLINICO-PATHOLOGIC CONFERENCE

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AND
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NEW ORLEANS

The following is a clinico-pathologic conference presented at a meeting of the Orleans Parish Medical Society on October 8, 1945.

Mr. A. R., a white male, aged 50, was admitted to the hospital June 28, 1945, and died July 6, 1945.

Chief Complaint: On June 27, 1945, the day before admission, this 50 year old white man suddenly developed severe abdominal pain in the central portion of the abdomen, which was associated with a sensation of cramping. This pain was continuous, but at times was sharper than at others. At no time during the 24 hour period, prior to admission, was there nausea, vomiting, or diarrhea. Constipation was not present. Approximately 12 hours after onset, the pain became localized in the suprapubic region and there was a desire to void. Voiding had no effect on the pain.

Physical Examination: The patient was well nourished, and of approximately the stated age. Temperature 102.4, blood pressure 125/75, and pulse 105. The heart was enlarged to the left, and a harsh systolic murmur was noted over the mitral area. The rhythm was regular. No rales were present. Muscular rigidity of the lower abdomen with marked tenderness in the suprapubic area was obtained.

Laboratory Studies: On admission, hemoglobin was 94 per cent, red cells 5 million, leukocytes 28,000, with neutrophiles 84, lymphocytes 13, and monocytes 3. A voided urine specimen contained a trace of albumin and many bacteria, but no pus cells or red cells.

X-Ray Studies: X-ray of the chest was negative.

Clinical Course: An appendectomy under spinal anesthesia was performed the day after admission. The first 24 hours postoperatively were uneventful. Beginning at this time, however, the pulse rose to 135 and many premature contractions (5 to 10 per minute) appeared. Blood pressure was 180/90. Venous pressure was 136 mm. of water and circulation time (arm to tongue) was 12 seconds. Cedilanid was begun. The pulse remained high (135 to 145) and the premature beats remained. Temperature was 99 degrees. On July 1, 1945, mild abdominal distention appeared. The cardiac findings remained constant. On July 4, 1945, distention was marked and vomiting was continuous. On July 5, 1945, a mild diarrhea appeared. On July 6, 1945, the vomiting became fecal in type. Although the pulse was now regular, the rate was still 135. The systolic pressure dropped to 60, and the temperature rose to 103 degrees. White count was 14,600 with neutrophiles 66 per cent. He expired three hours later.

Past History: The patient was first seen in 1940 with symptoms of acute appendicitis, which subsided three days later. No operation was performed. A history of heart disease since the age of eight was obtained at this time. In 1941, he was again admitted with cardiac arrhythmia and weakness, and profuse sweating. Auricular fibrillation with mild congestive failure was present. A soft non-transmitted mitral diastolic murmur was found, and the heart was moderately enlarged. Electrocardiograms showed no definite evidence of myocardial disease. All laboratory findings were normal. He was digitalized and discharged five days later, apparently in good condition.

In October 1943, he was again admitted with chills and fever of six days' duration. There had been repeated attacks of respiratory infection during the previous year, and on this admission he had a productive cough (brownish sputum). Associated with the chills and fever, were night sweats, palpitation and a rushing sound in the ears with each heart beat. X-rays of the chest showed clouding of both bases and both hilar regions. Red count was 4.4 million, and white count 9,650. Repeated blood cultures contained 10 to 15 colonies of Gram positive cocci in chains per cubic centimeter. Massive doses of sulfadiazine were given and the temperature dropped almost to normal. Blood cultures remained positive, until he was discharged in December 1943. Although low grade fever was present, he was ambulatory until March 1944, at which time chills and fever of 104 degrees reappeared. At this time conjunctival hemorrhages were noted, the heart was moderately enlarged, and a harsh systolic murmur was heard, both at the mitral and aortic areas. The liver was enlarged (three finger breadths) and the blood cultures were still positive. Sulfadiazine was again given, but on March 30 was discontinued, and penicillin was begun as a continuous infusion in 5 per cent glucose, so that 100,000 units were given every 12 hours. This was continued until 2,800,000 units were given in two weeks. At the end of this period, the temperature was normal and all symptoms had disappeared. He was observed at regular intervals and for the 14 month period following was asymtomatic. Repeated blood cultures were negative and repeated sedimentation rates were all normal.

Dr. J. H. Musser (New Orleans): I wonder how many of you have read the history of this particular case. If most have read it I will not go into the details; if most have not read it I think it advantageous to do so. (A showing of hands indicated that a majority of the audience had not read the clinical abstract.)

I am going to take the liberty of digressing somewhat from the order in which these various clinical studies are outlined and refer first to the past history. We have here the history of a patient 50 years old when he died, who at the age of eight was told he had heart disease. In 1941 he went to the hospital with the story of cardiac arrhythmia, weakness and profuse sweating. At that time auricular fibrillation with mild congestive failure was present, also enlargement of the heart. Electrocardiograms showed no evidence of myocardial disease. I am a bit skeptical about that report because if a person is fibrillating, cardiac disease is present. All other laboratory findings were normal. He was digitalized and discharged in good condition.

Here is an interesting part of this man's story: He began to have chills, fever, night sweats, palpitation and a variety of other symptoms, all of which were associated with evidences of heart failure. At this time he was shown to have a blood culture which contained 10-14 Gram positive cocci per cubic centimeter of blood. Sulfadiazine was given and the temperature dropped as happens so often when this drug is given; however, the blood culture still remained positive when he was discharged in 1943. High fever continued and he became worse in March 1944, three months afterwards. Note, if you will, at this time conjunctival hemorrhages were present; his heart was enlarged with a systolic murmur; the liver was swollen and blood cultures still positive. Sulfadiazine was again given but discontinued on March 30 and penicillin was begun as continuous infusion with 5 per cent glucose; 100,000 units were given every 12 hours.

I interpret these findings as being those of a man who had rheumatic heart disease with mitral stenosis and, as happens so often with these individuals with mitral disease, subacute bacterial endocarditis develops. My interpretation of the further results with penicillin was, as a result of administration of this drug, the man was cured; cured of the septic process but of course not cured of the heart condition. Note that at the end of having these almost 3,000,000 units, he was then observed at regular intervals and for the following 14 months was asymptomatic. Repeatedly the blood cultures were negative.

I am going to use the above findings as

a basis for my assumption that the story that we are going to develop now was dependent upon this man having had subacute bacterial endocarditis and recovering from that heart infection. In my mind at least, it is quite plain that the man had a vascular accident which evidently was the ultimate cause of death. I think he had a mesenteric embolus; there were two possible causes of this embolus. One, that he had had a subacute bacterial endocarditis with vegetations on his endocardium, and that some 14 months later one small bit of the healed vegetation broke off and went in the peripheral circulation. The other possibility, if my thinking is right as to the cause of death, is that he had a mural thrombus. He was a man who had auricular fibrillation at one time and who was in partial failure, if not almost complete failure. These people frequently send forth emboli into the peripheral circulation from an intracardiac thrombus, particularly if normal sinus rhythm is restored. One other thought; digitalis is by no means a harmless drug and digitalization is often followed by thrombotic phenomena, so much so that some Chicago cardiologists are advising digitalis only under rigid criteria.

If this first concept of this case is correct, note that the patient came into the hospital on June 27, 1945, with an extremely severe abdominal pain in the central portion of the abdomen associated with sensations of cramping. The pain was described as continuous which is not according to Hoyle, because if you have cramping, at times it is sharper than at other times. No nausea or diarrhea occurred at any time. The absence of vomiting disturbs my diagnosis immediately, but I am going ahead and consider the patient should have vomited although he did not. Constipation was not present. Approximately 12 hours after onset of pain it became localized in the suprapubic region and there was desire to void but voiding had no effect on the pain.

In the physical examination of this man, observe that he was well nourished; he had a temperature of 102° and a fraction; his blood pressure was only 125/75; the heart was enlarged to the left and there was a systolic murmur noted over the mitral area. There was muscular rigidity of the lower abdomen. On admission hemoglobin was 94 per cent; red cells 5,000,000. Note the number of leukocytes was 28,000 with 84 per cent polys and 13 per cent lymphocytes. The urine specimen showed a trace of albumin, bacteria, but no pus cells or red cells. X-ray of the chest was negative. His heart was enlarged to the left definitely and he had mitral stenosis so the chest x-ray was not negative—I presume the report implies that the lungs were negative.

This man was sufficiently ill so that an immediate appendectomy was done under local anesthesia. For the first 24 hours postoperatively nothing happened; however, beginning at this time the pulse rose to 135 and there were many premature contractions. Blood pressure was 180/90. The fact that he came in with a blood pressure of 125/75 and then it hopped to 180/90 makes me believe that this patient came in in acute circulatory failure from which he recovered. Venous pressure was 136 mm. and circulation time was normal. Cedilanid was begun. It was thought he was going into heart failure, as probably he did. The pulse remained high; temperature 99°.

I do not believe that the heart condition had anything to do with the cause of this man's death. Before I read the next few lines, which complete the history of the case, I would like very much to know more about the appendectomy and the pathologic change in the appendix, because there are two possibilities with this patient. He may have died as a result of some postoperative complication of the appendectomy or, as I think more likely, he died of something which had no relation to the appendectomy. In other words, I would interpret the findings as given here that the man was operated on because of the acute abdominal findings plus a high leukocyte count, parenthetically usually found not so high in acute appendicitis. I would interpret that an appendectomy was done and a normal appendix found. I do not put too much stress on the cardiac findings either.

On the first of July, three days later, there was mild abdominal distention and the cardiac findings remained constant. On the fourth of July distention was marked and vomiting was continuous. On the first there was mild diarrhea and on the sixth the vomiting became fecal in type. Although the pulse was now regular, note it was still 135. The white count was 14,600. He expired three hours later.

It would seem to me that in analyzing this case, as I said before, I do not think the appendectomy had much to do with his subsequent death. I do not think the heart condition was the cause of death. You surgeons know that you operate on people with auricular fibrillation or marked cardiac disease and obstetricians know you can take care of women with mitral lesions and fibrillation and they come through beautifully. I do not think in this relatively young man that his heart had anything to do with his death. I thought at first of the possibility of his having solely a vascular death but it is so definite that after the abdominal distention disappeared, it continued to become worse and worse; the vomiting grew worse and eventually became fecal so that we cannot get by the fact this patient must have had postoperative ileus; undoubtedly this ileus was secondary to a vascular catastrophe. In other words, a vascular catastrophe was the immediate cause of death and secondary to that would be the changes that appeared, or I hope will be shown to you on the screen when the pathologist discusses this case. I thought for a time the man had a dissecting aneurysm but the symptoms are not clear for this condition. Of course I think any one reading this case history would come to the conclusion that one of the possible causes of death would be one or another of the complications of appendectomy. It seems to me more logical to conclude that this gentleman had an embolus, an embolus carried down to one of the mesenteric vessels which cut off the circulation to a particular area of the gut as result of which he developed an ileus and as a result further of the infarction in that particular area, death of the gut took place with the development of a general peritonitis.

The immediate cause of death was a mesenteric thrombosis. I would go so far also to suggest it is quite possible that it was in the inferior mesentery, not as common a site of thrombosis as the superior, as you may recollect that the chief complaint in the present illness was pain in the suprapubic region, associated with a constant desire to void. You remember that the interior mesenteric vessel supplies in part the blood to the bladder.

This would be my final diagnosis: A previous subacute bacterial endocarditis, healed; embolus some 14 months later, carried to the inferior mesenteric artery with thrombosis, infarction, with death of tissue and with very possibly the development of a general peritonitis. The general peritonitis is not necessary to complete our picture. He might well have died as a result of the intestinal obstruction from the mesenteric thrombosis before the general peritonitis actually became well developed. I am very interested to know what the pathologist will tell about this case. As I said, the case is a most interesting one; one that offers a half dozen or more diagnostic possibilties, of which time will not permit a full discussion.

Dr. John R. Schenken (New Orleans): The external examination of this body revealed a well developed and well nourished male who showed no peripheral edema. There was a recent lower right rectus incision in the abdomen. The abdomen was distended markedly. The peritoneal cavity was opened and showed loops of intestines in a typical step-ladder pattern and adherent one to another by delicate fibrinous adhesions which were easily separated. They were obviously formed after the operation. There was considerable amount of blood in both lumbar gutters and in the cul-de-sac. It was not measured but I presume from description that there were at least 1,000 c.c. The appendiceal stump was covered by omentum and when it was removed it was found that the appendix stump was still inverted, the suture in place and there was no evidence of leak. However, there was some hemorrhage in the region of the meso-appendix. The cecum and lower third of the colon had a purplish discoloration. Because of the friability of tissues these structures were almost gangrenous. The accumulation of the exudate and blood in the cul-de-sac no doubt accounted for the attack of diarrhea postoperatively. This is a common finding in cul-de-sac abscesses. The pleural cavities contained nothing of note except a small amount of fluid and no adhesions. The liver showed some evidence of nutmeg liver which indicated that there was still evidence of chronic passive congestion due to heart failure. The spleen weighed 150 grams. Nothing remarkable was found and there was no evidence of old infarction of the spleen. The pancreas was normal. The right kidney weighed 250 grams and the left 200 grams. Both were definitely enlarged. The surfaces were smooth and there was no evidence of old infarction as is often seen in subacute bacterial endocarditis. Microscopic examination of the kidney revealed no important finding except for thrombosis of several of the branches of the renal vein in the region of the hilum. I presume the large kidney was due to acute passive congestion. This gives us a clue that the vascular damage in the cecum and ascending colon was venous instead of arterial though that particular point was not proved by an adequate dissection. Venous thrombosis occurring in circulation of postoperative patients, particularly with heart failure, is not a rare condition. As a matter of fact, if looked for in the deep veins of the calf, it occurs very commonly. The postoperative blood culture was negative. The urinary bladder and prostate showed no particular findings.

First slide: This is the picture of the heart before dissection. It weighed 575 grams. It is definitely an enlarged heart—about double in size. There were a few old adhesions on the surface of the pericardium. A few petechiae were also present which are commonly seen in cases of anoxia.

Next slide: This is the left ventricle opened up and the valve you see is the mitral valve. The valve is not particularly thickened. It is quite pliable and does not show the evidence of previous disease.

Next slide: This is the right ventricle opened up. You will notice above the central cusp of the tricuspid valve a small opening below which is a small blood clot. The aperture measured 0.6 of a cm. in diameter.

Next slide: Notice how smooth the margins of that opening are now after the removal of the postmortem blood clot. There is no evidence here of vegetations. This aperture leads to the left ventricle and opens directly below the right anterior cusp of the aortic valve. The question, of course, is whether this is a congenital lesion or an acquired aneurysm that ruptured, causing a defect in the aortic septum as is possible in bacterial endocarditis. Naturally, the most likely thing is congenital lesion. This is a classical location for a defect in the aortic septum. It is listed as one of the defects of the interventricular septum but is a particularly rare one, occurring in the sinus valve beneath the valve cusp and particularly beneath the right cusp.

Next slide: The next picture here almost settles the argument. This is a picture of the pulmonary valve. Notice it is bicuspid. That little piece of valve to the right side belongs to the valve on the left. That one in the middle is one continuous valve. That is actually a bicuspid valve so that the other lesion is associated with a definite congenital malformation. This makes it almost certain that both are congenital anomalies, that is, a defect of the aortic septum and a congenital bicuspid valve. Now there is no evidence of any subacute bacterial endocarditis. No doubt, this was a clinical case of subacute bacterial endocarditis. The fact that no evidence of embolic phenomena was found on the arterial side does not rule it out because the blood flow would be from the left to the right in this particular defect and therefore any embolic phenomena which occurred would more likely go to the pulmonary circulation instead of the peripheral circulation. The branches of the pulmonary artery are often occluded without production of infarction because of a rich double blood supply in contrast to the spleen and kidney. Small infarcts may have been present in the lungs and the resulting small scars might have been missed in lung tissue.

There was an appendicitis. The surgical description of the appendix showed acute suppurative appendicitis almost to the point of gangrene. There was a postoperative generalized peritonitis as a result of the appendicitis.

I believe the vascular phenomena secondary to failure of the heart and marked distention occurred as a result of the peritonitis.

The organism responsible for the subacute bacterial endocarditis was the *Streptococcus viridans.* It was isolated on several occasions.

The predisposing factors responsible for subacute bacterial endocarditis are blood stream invasion of organisms and an abnormal heart. Just when and how the organism gains access to the circulation is often unknown. It is difficult to evaluate the significance of a preceding mild attack of grippe or upper respiratory infection as being responsible for the initial blood stream invasion. But one predisposing factor is very definite—that of tooth extraction. Many patients date the onset of their illness following the extraction of teeth. The causal relationship between tooth extraction and subacute bacterial endocarditis is further supported by the observation of several investigators that organisms frequently appear in the blood stream following the extraction of a diseased tooth. The more teeth extracted at one sitting the larger the number of organisms in the blood stream and the longer they remain there. Usually they disappear in a matter of hours. The heart abnormalities which predispose to the localization of the organisms are, in the order of importance: (1) rheumatic fever, (2) congenital malformations, and (3) syphilitic valvulitis.

This is the summary of a patient who was cured bacterially and anatomically of his bacterial endocarditis but died of the acute infection of the appendix with a peritonitis, aided by a cardiac insufficiency.

Dr. J. H. Musser (New Orleans): In spite of the absence of vegetations I am quite convinced that this man did have subacute bacterial endocarditis. It is possible that there were vegetations prior to the time the man was given penicillin, because you find a remarkable disappearance of vegetations after penicillin therapy and in the people who die later of congestive heart failure, as so many of these people do, after they are cured of the streptococcal sepsis.

I think the crux of the whole matter, whether death was due to vascular origin, arterial or venous, lies in the one sentence —appendectomy under spinal anesthesia was performed. We have no way of knowing whether or not the appendix was normal or if there was an acute suppurative appendicitis. Actually I think if I would restudy the history I would say mesenteric thrombosis was the cause of death rather than acute appendicitis (a remarkably high leukocyte count, evidence of shock, bloody peritoneal fluid). Parenthetically I might observe that the bloody fluid in the abdomen is one of the important clinical findings in mesenteric thrombosis; so important that it is at times considered to be pathognomonic of this disorder.

I assumed, that because nothing further was said about the appendicitis in the clinical abstract, we would have to attribute death to some cause other than postoperative complications directly dependent upon the acute appendicitis. Obviously I was wrong—the appendicitis and the secondary results of the appendicitis were the cause of death.

Dr. George E. Burch (New Orleans): There are a couple of things of further interest. (1) The patient had a bicuspid pulmonary valve which means that the patient had a congenital pulmonary stenosis and an increase of the intraventricular pressure in the right ventricle. (2) There was a patency of the intraventricular septum. Under such conditions paradoxical embolism must be considered; blood will flow from the right to the left side of the heart rather than in the reverse direction. It may be that there was a paradoxical embolus from phlebothrombosis of the veins of the pelvis or lower extremities, with the flow of the embolus into the left side of the heart with delivery to the mesentery vessels.

My impression was that Dr. Schenken said there was involvement of the cecum and ascending colon. I wonder if this contributed to the appendicitis, the speculation being that the appendicitis was the first thing to manifest itself although mesenteric embolic occlusion existed earlier.

As we know, nature provides us with three cusps guarding our pulmonary and aortic openings; the circumference of the pulmonary and aortic rings being 2 Pi r, or essentially six radii. The edges of three cusps combined measure six radii or the length of the circumference of the pulmonary or aortic rings. The edges of the two cusps have a length of only four radii. With two cusps there must be stenosis with an increase in intraventricular pressure. Unfortunately such measurements have not been made in this patient and the mesenteric vessels were not dissected out in detail, therefore it is impossible to answer the points raised above.

Dr. John R. Schenken (New Orleans): There was no pulmonary stenosis. Even though this was a bicuspid valve the one valve cusp represented in its total circumference the same length as two valve cusps. There was an attempt at making a third cusp but that did not materialize. If a stenosis of any degree had been present, it would have caused a right ventricular hypertrophy which was not present.

NEW ORLEANS

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THE ANNUAL MEETING

It becomes the pleasant and present duty of the editor to call attention to the approaching meeting of the Louisiana State Medical Society. Last year this privilege was not his. After an interim of only one year, the state organization will again meet in their annual convocation; the place, Alexandria; the time, May 6, 7, and 8.

The meeting of the House of Delegates is called for Monday, May 6. The scientific program will begin on the following morning and will last for two days. During this period of time there will be 15 papers presented by Louisiana doctors and one by a distinguished out-of-state guest, Dr. Bayard T. Horton, of Rochester, Minnesota. The full program will appear elsewhere in the Journal. It will be noted that there will be presented a well rounded series of papers on subjects of varied interest, from pathology to gynecology, from war experiences to pancreatic disease. There is probably not a physician in the state who will not find the program of general interest. A special effort has been made by the chairmen of the sections to have the essayists present their subjects so that they will be of interest to all practitioners and so that they will have direct bearing on the practice of medicine wherever it may be. The paper by Dr. Horton on "Headache" certainly presents a subject which is of paramount importance to every doctor who practices medicine. It is a common symptom, but its cause is often difficult to determine and its treatment unsatisfactory.

It seems hardly necessary to comment on the fact that aside from the scientific program the State Medical Society meetings are always an occasion for a good time, particularly when they are held in Alexandria. The Alexandria doctors who will be hosts have always entertained the society royally and we can count on their continuing this well established custom of the past.

* * *

MEDICAL CARE

This editorial has had to be rewritten. We were prepared to comment on the remarkable statement which appeared in the Journal of the American Medical Association to the effect that of the monies collected to run the British panel system, the doctors received only twelve and one-half per cent of the total intake. This seemed most remarkable but could be believable. In the last number of the Journal, however, the secretary of the British Medical Association, Charles Hill, has corrected this error and states that actually the administrative expense amounted to a little over 17 per cent. Even with this correction it does seem that a larger proportion than is necessary goes to the running of the National

Health Insurance in Great Britain. Certainly it is greater in amount than the insurance plans that are in effect throughout our country now, under the jurisdiction of state or county medical societies.

The physician in combatting regimentation of his profession, as will occur if the Wagner-Murray-Dingell bill should be passed by the Congress, should stress the cost of such legislation. As Dr. Louis H. Bauer, of the Board of Trustees of the American Medical Association has pointed out, the cost of health insurance will be "inordinately expensive to the American taxpayer." We wonder if the American taxpayer realizes that a 15 to 17 per cent tax will be necessary, or does the wage earner or salaried employee appreciate that there will be an eight per cent payroll tax? In view of the enormous debt that this country has accrued during the past few years of war it is certainly to be hoped that all unnecessary expense will be deleted from the national budget. We physicians feel that this is an unnecessary expense because the people of the United States receive medical care now which is the best that is given in any country in the world; given without bureaucratic control and implemented by the medical profession.

TREATMENT OF SYPHILIS WITH PENICILLIN

There was a symposium in a recent issue of the Journal of the American Medical Association which dealt with penicillin in the treatment of syphilis. The symposium had to do largely with the treatment of the syphilitic pregnant woman, prenatal syphilis and neurosyphilis and not with the acute stages of the disease which have been extensively reported upon elsewhere.

It must be borne in mind that a few of the pregnant women had syphilis in its acute stages but most of these patients were in the early or late latent stages. A group in Philadelphia felt that the pregnant woman with syphilis should have from one and one-fourth to two and one-half million units of penicillin, preferably the latter. The initial dose for the first twenty-four hour period is reduced one-half during the second twenty-four hours, continuing this dosage from seven to nine days. The smaller dose after the first twenty-four hours is given to avert a possible abortion from a shock reaction. They stress the fact that penicillin works perfectly beautifully but that abortion is a very real threat to the woman who has syphilis and is pregnant and is treated with penicillin.

The Baltimore group accentuate the effect of penicillin treatment on the unborn child. In latent untreated syphilis the majority of children are born without syphilis; only when the mother has early syphilis which is not treated during her pregnancy is there likely to be a syphilitic child. Only one of sixty children born to the women who were properly treated had clinical or laboratory evidence of congenital syphilis. Goodwin and Moore recommend that in the syphilitic pregnant woman penicillin should be used routinely in order to prevent prenatal syphilis and all other methods of treatment should be abandoned. In the treatment of early syphilis with penicillin two Dallas observers note that when the dosage is adequate that the majority of patients with primary and secondary syphilis will be cured. Adequate dosage, according to these two observers, is 40,000 units injected into the muscles every three hours day and night for a period of a week. They also note that mapharsen and bismuth are distinctly beneficial with penicillin therapy.

In the treatment of neurosyphilis O'Leary and his group find that parenchymatous types of syphilis apparently are not benefited by penicillin therapy. On the other hand, meningeal neurosyphilis reacted extremely favorably to penicillin therapy. They are not emphatic in their statements in regard to penicillin therapy in neurosyphilis as they feel that a period of three to five years should elapse before the worth of the therapeutic measure employed should be evaluated. They note furthermore that in patients with neurosyphilis that there is astounding reversal of the laboratory findings in the spinal fluid after penicillin therapy. On the other hand, in some types of neurosyphilis in which the spinal fluid did show reversals to the normal there was not the excellent clinical response which is observed with malarial therapy.

This symposium on the treatment of syphilis is well worth perusal. Physicians have been impressed with the efficacy of penicillin in the therapy of primary and secondary syphilis but the reports in the treatment of prenatal syphilis, of the syphilitic pregnant women, of the syphilitic child and in neurosyphilis have been at times equivocal, at times enthusiastic and at times depressing. The authors of these papers are well recognized in the field of syphilology and what they have to say should bear considerable weight in the evaluation of this undoubtedly efficacious remedy, penicillin.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

EXECUTIVE ACTION IN RE WAGNER-MURRAY-DINGELL BILLS

IMPORTANT

The importance of the present situation in medical legislation was particularly emphasized by a special meeting of the Executive Committee of the Louisiana State Medical Society held at the domicile of the Society on March 16. This meeting was called for the expressed purpose of discussing and reaching some decison as to what activity our organization should follow in presenting to the Senate Committee on Education and Labor a satisfactory representation of our opposition to the Wagner-Murray-Dingell Bills. The hearings before the Senate Committee will be initiated on April 2. It is stated, from reliable information from Washington, that the first few weeks of the hearing will be devoted to discussion and presentations from proponents of the bills. The medical profession will be privileged to present arguments beginning April 17. The hearings before the Committee, as scheduled, will be limited to national groups, according to the present rules adopted by Senator Murray, Chairman of the Committee. Pressure is being brought to bear, however, upon the Committee to permit hearings from the various state medical societies or other medical groups desirous of appearing before same. At this writing, however, the above plan has not been changed, and the various state medical societies are therefore permitted to present briefs to the Committee which will be properly received and recorded in the hearings of the Committee just as though the organization had personal representation before the Committee.

Suitable preparations were also made by the Executive Committee to send an appropriate delegation from our organization to Washington in the interest of our position in reference to this vital subject.

A special committee was also appointed to collect the opinions of the members of the Executive Committee in order to prepare a suitable brief for submission. The plan is to forward the brief prepared by this special committee to the Committee on Education and Labor.

The above recitation of the interest and activity of the Executive Committee is presented to you in order that you may be acquainted with same and that you may know that everything possible is being done to protect the medical profession against the vicious provisions of the Wagner-Murray-Dingell Bills. *Now* the medical profession must meet the issues raised by these bills (S. 1606 and H.R. 4730).

ANNUAL MEETING

Again, we wish to direct your attention to the approaching meeting of our State Society in Alexandria, May 6, 7, and 8. Headquarters are at the Hotel Bentley and those who have not yet secured reservations should write at once to Dr. L. D. Gremillion, who is serving as Chairman of the Hotel Committee in Alexandria, concerning accommodations. The hotel is rapidly filling up and we have all indications that this annual meeting will be the most representative one held by our State Society. It will be especially attractive because it is being dedicated to the medical officers returning from military service who are members of our organization. We feel assured that the sentiments of such a dedication will prompt each member with the desire to be present and to participate in this recognition which these members so justly deserve.

Following is a synopsis of the meeting:

Monday morning and afternoon—Meeting of House of Delegates.

Monday noon—Luncheon for House of Delegates.

Monday evening—Opening meeting of the State Society at which time Mr. Jay Ketchum, Executive Vice-President of the Michigan Medical Service, Inc., will speak on the subject of voluntary prepayment medical insurance. This meeting will be open to the public.

Tuesday morning and afternoon—Scientific program.

Tuesday noon—Luncheon for members.

Tuesday evening — Entertainment for members and guests.

Wednesday morning and afternoon — Scientific program.

Wednesday noon—Luncheon for members.

Following is the complete scientific program and we wish particularly to call your attention to our out-of-state guest, Dr. Bayard T. Horton, of Rochester, Minnesota, who will present a paper on "Headache" on Tuesday afternoon.

TUESDAY MORNING, MAY 7

1. Chronic Cough in Children—R. V. Platou, M.D., New Orleans
2. The Lempert Endoral Fenestration Operation for Clinical Otosclerosis — James W. McLaurin, M.D., Baton Rouge
3. The Management of Common Eye Injuries in the General Practitioner's Office—F. W. Raggio, Jr., M.D., Lake Charles
4. Calcareous Pancreatic Disease—Murrel H. Kaplan, M.D., New Orleans

TUESDAY AFTERNOON, MAY 7

5. The Use of Biopsies in the Diagnosis of Tumors—Charles Dunlap, M.D., New Orleans
6. Essential Factors in Preoperative, Operative, and Postoperative Care in Gynecological Patients—C. M. Johnson, M.D., New Orleans
7. Acute Craniocerebral Injury—H. Reichard Kahle, M.D., New Orleans
8. Headache: Diagnosis and Treatment—Bayard T. Horton, M.D., Rochester, Minnesota

WEDNESDAY MORNING, MAY 8

9. Intravenous Pyelography as An Aid in Diagnosis—Lucien A. Fortier, M.D., New Orleans
10. Plastic Operations for Urethral Strictures—J. R. Stamper, M.D., Shreveport
11. Saddle Spinal Anesthesia in Obstetrics —John Adriani, M.D., and Ray Parmley, M.D., New Orleans
12. Civilian Application of Battle Casualty Experiences—Charles B. Odom, M.D., New Orleans

WEDNESDAY AFTERNOON, MAY 8

13. Disease and the Aged—W. A. Sodeman, M.D., New Orleans
14. A Study of Heart Disease in the South —Joe E. Holoubek, M.D., and Alice B. Holoubek, M.D., Shreveport
15. Some Common Errors in Fracture Treatment—Lyon Loomis, M.D., New Orleans
16. Five Years Experience with Electric Sleep (Electric Shock) Treatment —

Charles S. Holbrook, M.D., New Orleans

It is hoped that this scientific program will have your serious thought and attendance. You will note that no doctors have been listed to open discussion of the scientific papers. The plan to be followed this year is to give opportunity for questions, either oral or written, to be presented. It is felt that profitable discussion will be the result and it is hoped that all members present will feel free to participate in this phase of the program.

The doctors of the Rapides Parish Medical Society and their friends in Alexandria are leaving no stone unturned to develop ways and means to make your stay in that city a pleasant and profitable one. They will provide suitable entertainment for all. Following are copies of communications received from the Mayor of Alexandria, the Chamber of Commerce and from Dr. R. Bruce Wallace, Chairman of the Publicity Committee, whch are evidence of your welcome to the City of Alexandria.

February 21, 1946

Dear Dr. Talbot:

It is my understanding that the Medical Association will hold its convention in my City around the 6th of May, 1946.

As Mayor and Chief Executive of the City of Alexandria, I wish to offer your association and the members a very hearty welcome to Alexandria, Louisiana.

In the course of your getting ready for this convention, if there are any details that you would like to have me attend to, please feel free to call on me at any time as it will be a pleasure for me to assist you in any way possible.

You all are more than welcome to our City, and I am looking forward to seeing you.

Yours very truly,
J. A. (BROTHER) BLACKMAN,
Mayor of Alexandria.

March 1, 1946

Dear Dr. Owens:

It is with much pleasure that we learn of the Louisiana State Medical Society meeting in Alexandria on May 6, 7, and 8, and commend your decision to dedicate this convention to the medical officers returning from the military forces.

If there is any way in which we can assist you in your preparations, we hope you will call upon us, and we assure you that we will do all humanly possible with our small staff and limited resources.

We are indeed proud to have such a group meeting here and wish you a most successful convention.

Very truly yours,
J. F. JORDAN
General Manager
Alexandria Chamber of Commerce

WELCOME TO ALEXANDRIA AND RAPIDES PARISH

This City and its vicinity in the geographical center of the state are endowed with alluvial lands and uplands which produce innumerable varieties of trees, shrubs and flowers.

The artificial beauty of its well kept parks and pools, homes and gardens, together with its hospitable people and central location readily proclaims Alexandria as a Convention City of Louisiana.

Alexandria, the parish seat of Rapides Parish, is located on Red River, in the geographic center of Louisiana at an elevation of 77 feet. Directly across Red River is the sister city of Pineville and though separately incorporated, Pineville and Alexandria are one community, commercially and socially, having a combined population of 60,227, according to Page's 1943 City Directory.

Alexandria was named for Alexander Fulton, on whose grant from Spain the first settlement was made in 1785. This settlement served as a landing on the Red River, and wagon trains from Louisiana and Texas covering the Natchez Trace, obtained their supplies from boats at this point. It is readily apparent that the distribution and transportation business which play so prominent a part in the life of modern Alexandria began many years ago. The City was incorporated in 1819 and received its charter in 1832.

Alexandria has the Commission Council form of government and owns its public utilities and transportation systems. The City is heated with natural gas.

Our present officers are wide awake, energetic and progressive men: viz; J. A. Blackman, Mayor, and W. A. McLean and R. W. Bringhurst, the other Commissioners.

Our statewide convention, the first enjoyed in several years, is dedicated to the medical veterans of World War II. This is the highest honor which can be bestowed on these valiant men of our great medical profession. We are proud of you! Three cheers for the Red, White and Blue! May it be possible for all of you to be here with us!!

———o———

NEWS NOTES FROM COMMITTEE CHAIRMEN

1. Advisory: —Dr. Rand says he sits in waiting to assist in the solution of any problem that may arise.
2. Badges: —Dr. McGill states that appropriate badges will be furnished at the registration desk.
3. Banquets: —Dr. Aubrey White is completing all banquet arrangements.
4. Commercial Exhibits: —(a) Dr. Simmonds reports that he is receiving the sales of space to commercial exhibitors. (b) Dr. Miller is in charge of allocating space to the commercial exhibitors on the lobby floor of the hotel headquarters, and will be present at 9 a. m. the 5th of May to assist in placing the exhibits.
5. Decorations: —Dr. Barker will have ample decorations for all occasions.
6. Entertainments: —Dr. Percy is active in completing all necessary entertainments for our visitors.
7. Finance: —Dr. James White is receiving checks almost daily, and is making such disbursements as are required.
8. Golf: —Dr. Bryant will stage a tournament to be held Tuesday, May 7, after which prizes will be awarded. Bring along your togs and clubs and have a good time.
9. Halls and Meetings: —Dr. Parrott is selecting halls and rooms at headquarters for the various programs.
10. Hotels: —Dr. Gremillion has received many reservations; he suggests that you make reservations as early as possible.
11. Lanterns and Projectors: —Dr. Barber already has both a motion picture and a slide machine in readiness; also, has an operator engaged.
12. Luncheons: —Dr. Culpepper states that he expects to have you well fed.
13. Registration: —Dr. Hardy will have the registration desk on the lobby floor in a conspicuous location at hotel headquarters. Ladies of the auxiliary, he states, will assist the regular staff.
14. Scientific Exhibits: —Dr. Masterson informs us that these exhibits will be placed on tables on the mezzanine floor.
15. Signs: —Dr. Texada will have a streamer in front of the headquarters, and has engaged a sign painter to care for any last minute exhibitors' signs.
16. Transportation: —Dr. Cappel will have cars for the golfers and any others who may request them; please leave requests at the registration desk.

Please either write or 'phone these chairmen if they may be any service to you.

R. BRUCE WALLACE,
Chairman, Publicity Committee.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of very month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

PRESIDENT VAL H. FUCHS

Dr. Fuchs was born September 30, 1894, in New Orleans, and received his preliminary education at Jesuit's College. His premedical work was taken at Tulane and in 1917 he graduated from the medical school. He then had an internship at New Orleans Charity Hospital and subsequently served in Base Hospital No. 102 in the A.E.F. in Italy in World War I. After the war Dr. Fuchs returned to New Orleans and has been practicing the specialty of otolaryngology since that time. So well recognized is Dr. Fuchs as an outstanding specialist in his particular field that he was made head of the Department of Otolaryngology in the Graduate School of Medicine at Louisiana State University when the medical school was established, since which time he has been appointed professor of clinical otolaryngology of the undergraduate school of medicine at that university.

Dr. Fuchs has been active in organized medicine for many years. Not only is he a member of the local and state medical societies but is a member as well of the Southern Medical Association, American Medical Association, College of Surgeons, American Academy of Ophthalmology and Otolaryngology and a diplomate of the National Board of Otolaryngology. He has been president of the Orleans Parish Medical Society, New Orleans Eye, Ear, Nose and Throat Society, the New Orleans Hospital Council and of the staff of Hotel Dieu and is now president of the Louisiana-Mississippi Academy of Ophthalmology and Otolaryngology.

Dr. Fuchs' civic activities have been numerous. He is past president of the New Orleans Kiwanis Club. He was Chief of the Emergency Medical Service of the New Orleans O.C.D. He is a member of the Advisory Board No. 1 of the Selective Service, a member of the Nurses' Procurement and Assignment Service and chairman of the Nurses' Aid Committee of the American Red Cross.

On account of war conditions Dr. Fuchs has served as president of the State Society for two years. During this period of time he proved himself to be one of the most outstanding presidents that the State Society has ever had. He has taken an active and personal part in the activities of the organization and has given unselfishly of his time and talents.

BAYARD TAYLOR HORTON

The guest speaker on the scientific program of the 1946 meeting will be Dr. Bayard Taylor Horton, of Rochester, Minnesota. Dr. Horton graduated from the University of Virginia, Department of Medicine, in 1922. He early became associated with the Mayo Clinic, where at the present time he is Head of the Section of Clinical Research. Dr. Horton's personal investigations have dealt largely with vascular disease.

Dr. Horton is also Associate Professor of Medi-

cine at the Mayo Foundation of the University of Minnesota. He is a member of the Central Society for Clinical Research and the American Society for Clinical Investigation, as well as a member of the state and national medical organizations. He is a licentiate of the American Board of Internal Medicine.

LOUISIANA TUBERCULOSIS ASSOCIATION ANNUAL MEETING

Bentley Hotel, Alexandria, La.
Sunday, May 5, 1946

PROGRAM

SYMPOSIUM: RECONVERSION FOR TUBERCULOSIS CONTROL

9:00 a.m. Opening Session—Presiding: Dr. I. L. Robbins
President's Address—Our Program for 1946—Dr. Julius L. Wilson
Need for Additional State Facilities—Dr. P. R. Gilmer
Early Diagnosis—Dr. John M. Whitnew
Undergraduate Training—Dr. Edgar Hull
The State Association's Plan for Re-Refresher Courses — Dr. Maurice Campagna
How the Health Department Can Help the Practitioner—Dr. David Brown

11:00 a.m. Business Session — Presiding: Dr. Wilson
Election of Officers
Reports—Mrs. John M. McBryde, Executive Secretary; Miss Lois Simmons, Field Supervisor
Roll Call of Parish Associations—one minute of highlights

12:30 p.m. Luncheon — Presiding: Judge J. B. Nachman.
Financial Aid to the Tuberculous—Miss Anna Harrison

2:00 p.m. Afternoon Session — Presiding: Dr. Joseph A. Danna
Rehabilitation—Mr. Seid Hendrix
Private Hospital—Dr. Charles R. Gowen
Unconvertible Cases—Dr. R. I. Pierce
Children and Tuberculosis—Dr. Ralph Platou

8:00 p.m.—Evening Session—Presiding: Dr. J. T. Cappel
X-Ray Conference—Conductor: Dr. A. A. Herrold

Any physician in Louisiana who wishes to bring chest films with interesting or difficult diagnostic problems is invited to do so.

X-Ray Conference to follow the dinner.

BI-PARISH MEDICAL SOCIETY

The Bi-Parish Medical Society met in March at the East Louisiana Hospital. After dinner the society held a scientific program in the staff room.

Drs. Glenn J. Smith, C. E. Sturm and E. M. Robards were appointed as a special committee to endeavor to get more physicians from the parishes of East and West Feliciana and surrounding territory to attend our meetings in the future.

Dr. Jack R. Jones, of Baton Rouge, read an interesting and instructive paper on pruritus vulvae. Dr. C. S. Toler, of Clinton, read an instructive paper on streptomycin; case reports and use in many diseases. Both papers were discussed favorably by physicians present. A vote of thanks was extended to Drs. Jones and Toler for the presentation of these timely and excellent papers.

The society adjourned to meet in the East Louisiana State Hospital the first Wednesday in June, 1946.

MINUTES ON RESIGNATION OF DR. MAGRUDER

WHEREAS, Dr. Marcus Johns Magruder has resigned from the Board of Administrators of the Tulane Educational Fund after having served as an administrator for 31 years, it seems fitting that the Executive Faculty of the Tulane University School of Medicine should take cognizance of the many years that Dr. Magruder was active in conducting the professional and business affairs of the School, therefore

BE IT RESOLVED, That the Executive Faculty wishes to record in its minutes their appreciation of the years of devoted service he has given to the School. Dr. Magruder was appointed to the Medical Advisory Committee in 1914 and became Chairman of the Committee in 1924, a position which he held until the time of his resignation. Dr. Magruder gave unsparingly of his time and of his intellect to the affairs of the School. As Chairman of the Medical Advisory Committee, Dr. Magruder was influential in effecting the innovations that have resulted in the School's rise from a relatively small Southern institution to one of national and international reputation. During Dr. Magruder's term of office as Chairman of the Medical Advisory Committee revolutionary changes occurred in the teaching of medicine at Tulane. He was instrumental in securing the present modern Hutchinson Memorial Building and worked an untold number of hours in consulting and advising in the plans of this building. He was always progressive in his point of view of medical education and his sound advice and constructive criticisms have been of inestimable help to Deans Dyer, Bass, Lapham and Kostmayer who have worked with him.

It is with the deepest regret that the Executive Faculty has learned of Dr. Magruder's resignation but it realizes that the years roll by and that it was no longer just and fair to ask Dr. Magruder to give further time to an exacting and responsible position. The Executive Faculty extends to him grateful good wishes.

BE IT FURTHER RESOLVED, That a copy of this resolution be sent to the President of the Board of Administrators, the President of the University, and to Dr. Magruder, as well as being incorporated in the minutes of the Executive Faculty.

L. S. U. MEDICAL SCHOOL GRADUATION

At the March graduation of the Senior class from the L. S. U. Medical School, Dr. Chauncey D. Leake of the University of Texas Medical School addressed the graduating class. Of 67 graduates, 32 were members of the Army Specialized Training Unit and were presented with their commissions along with their diplomas.

Dr. Urban Maes, Professor of Surgery, made the following awards: To Dr. Joe F. Simpson the George S. Bel Memorial Award, and to Dr. Rufus H. Craig the J. A. Majors award for the highest scholastic grade in pathology. The Walter Reed Memorial Medal, presented by the State Medical Society to a Senior student presenting the best essay on tropical medicine or public health, was awarded by Dr. Andrew G. Friedrichs representing the State Medical Society, to Dr. Margaret S. Wiedorn.

LaGARDE HOSPITAL

According to the Times-Picayune of March 21, the Veterans Administration has awarded the New Orleans Medical Foundation the use of 500 beds in the LaGarde General Hospital. The full details of the plan have not yet been worked out, according to Dr. Charles B. Odom who is president of the Medical Foundation. Dr. Odom states that the beds at the hospital will be for the use of the patients of all members of the Orleans Parish Medical Society on the same basis as are other hospitals in New Orleans. The 115 members of the New Orleans Medical Foundation are veterans of World War II who have recently returned to their practice. It is earnestly to be hoped that they will be able to put over the plans that they have outlined to give to New Orleans 500 more beds for the use of the private patients of the city physicians.

Five hundred beds will also be used in the LaGarde General Hospital by the Veterans Administration for their clientele.

De PAUL SANITARIUM

The regular monthly meeting of the Staff of De Paul Sanitarium was held in conjunction with the New Orleans Society of Neurology and Psychiatry on February 21, 1946, at the Sanitarium and was preceded by the annual banquet. The following were in attendance: Drs. Rowland, Barkoff, Beach, Hill, A. Colomb, H. Colomb, Anderson, Fuchs, Kirgis, W. H. Harris, Hite, May, Unsworth, H. P. Harris, Levy, Himmelsbach, Bolian, Mason, Diamond, Connely, Holbrook, Nelken, Thompson, Danna, Friedrichs, Mayoral, Cole, Otis and Echols.

The joint meeting which followed was presided over by Dr. C. S. Holbrook, president of the De Paul Staff, and Dr. Dean Echols, President of the Society, was called to order at 8:10 p. m.

Dr. Echols, who was instrumental in the establishment of the Lewis A. Golden Collection for the De Paul Library, and Dr. Andrew Friedrichs, Chairman of the Library Committee of the Sanitarium, presented a stylized placque of the late Dr. Golden to the hospital which was drawn by Miss Vera Morel and from which a book plate will be made for use in the books presently in the Collection and in those which will be purchased with the Lewis A. Golden Collection fund. The portrait from which the placque was sketched was also presented to the Library. Dr. Echols' splendid efforts and interest in behalf of the Library were gratefully acknowledged by Drs. Friedrichs and Holbrook.

The scientific session consisted of the presentation by Dr. Hunter P. Harris of "A Case of War Neurosis Treated by Narcosynthesis" (Mr. E. S., No. 4401) with discussion by Dr. Murray Diamond, Dr. Walter Otis and Dr. C. S. Holbrook.

At the business session which followed it was moved and seconded that the reading of the minutes of the previous meeting be dispensed with. Monthly reports were read by Dr. Otis following which he reiterated the admission policy of the hospital; that is, to accept only those cases of a more or less acute nature in whom an appreciable degree of improvement may be expected following a reasonable period of hospitalization and treatment. He stated further in this regard that there was an increasing need for nursing homes for the care of the chronic or custodial type patient in the city.

Dr. Otis introduced the matter of dues but Dr. Holbrook made a motion which was seconded by Dr. W. H. Harris that the question of dues be dispensed with until the March meeting.

Dr. Harris stated that he wished to stimulate further interest in neuropathology and that in the future he and Dr. Friedrichs would discuss case presentations and postmortem findings more extensively from a neuropathologic aspect.

Dr. Bolian expressed a desire to have the charts of patients whom he sees made available at the time of examination and treatment.

The meeting of the De Paul Staff adjourned at 10:20 p. m. as the result of a motion made by Dr. Anderson and seconded by Dr. Friedrichs, following which business and scientific sessions of the New Orleans Society of Neurology and Psychiatry were held.

Louis J. Dubos, M.D.,
Secretary.

TOURO INFIRMARY

The regular meeting of the Medical Staff of Touro Infirmary was held on Wednesday, March 13 at 8 p. m. The program consisted of the following: A Clinico-pathologic Conference by the Department of Pathology with a clinical discussion by Dr. Jorda Kahle; The Rh Factor by Dr. J. W. Davenport; Preoperative Preparation of the Chronically Ill Patient by Dr. Champ Lyons.

SOUTHERN BAPTIST HOSPITAL

The regular monthly meeting of the Clinical Staff was held on February 26 at 8 p. m. The program consisted of: Case report, Postpartal Eclampsia by Dr. J. H. Young; The Watters Extra Peritoneal Cesarean Section by Dr. J. W. Reddoch; Urethral Diverticulum in the Female, by Dr. R. F. Sharp.

GRADUATE MEDICAL ASSEMBLY

The Nominating Committee of The New Orleans Graduate Medical Assembly has nominated the following members for office for the year 1946-1947:

Dr. Joseph S. D'Antoni	President-elect
Dr. Randolph Lyons	First Vice-president
Dr. H. Ashton Thomas	Second Vice-president
Dr. C. S. Holbrook	Third Vice-president
Dr. Max M. Green	Secretary
Dr. Edwin H. Lawson	Treasurer
Dr. Barrett Kennedy	Director of Program
Dr. J. O. Weilbaecher, Jr.	Asst. Director of Program
Dr. Ambrose H. Storck	Asst. Director of Program

Executive Committee

Dr. Howard R. Mahorner (two year term)
Dr. Lucien A. Fortier (two year term)

The following officers elected in 1944 for the coming year are as follows:

Dr. William H. Gillentine (President)

Executive Committee

Dr. L. C. Chamberlain (Retiring President)
Dr. Frederick F. Boyce
Dr. Charles B. Odom

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE

A meeting of the Southern Section of the Society for Experimental Biology and Medicine was held on Friday, March 1, 1946 at 8 p. m. in the L. S. U. School of Medicine. The scientific program consisted of the following: The Metabolism of Nicotinamide, Nicotinic Acid and Coramine by Newborn and Premature Infants, by Dr. R. A. Coulson, Department of Biochemistry of L. S. U. School of Medicine; Antibacterial Activity of a Benzil Derivative and Its Effect on Some Penicillin Resistant Infections by Drs. O. Schales, Thomas Findley, A. Suthon, M. Silvey, V. Mims and S. Schales of the Alton Ochsner Medical Foundation; The Rates of Water Loss from the Plantar and Dorsal Surfaces of the Foot of Man, by Drs. George E. Burch, Harvey Meyer, Reno Porter and Nathan Schaffer, of the Department of Medicine, Tulane University School of Medicine, and LaGarde Hospital; Chicken Antisera for Typing Meningococci, by Drs. K. C. Milner and M. F. Shaffer, Department of Pathology and Bacteriology, Tulane University School of Medicine; Weltmann Test in Cerebrospinal Fluid by Dr. J. M. Lubitz (introduced by Dr. C. E. Dunlap), U. S. Marine Hospital; Reaction of Cytochrome C with Hydrogen Peroxide by Drs. C. Alper, A. P. Mathers and A. M. Altschul (introduced by Dr. O. Schales), Department of Chemistry, Tulane University.

A business meeting was held at 7:15 p. m.

NEWS ITEMS

Lt. (j.g.) Charles Arthur Dwyer, a graduate of Louisiana State University Medical School in 1939, was awarded the Bronze Star for meritorious services in the Philippine Islands.

Dr. William B. Clark has just returned to New Orleans from a three weeks' visit to Guatemala and Mexico, where he is continuing his research project on the ocular manifestations of onchocerciasis.

Mrs. Helen Wilder of the American Registry of Pathology and the Army Medical Museum gave a talk on eye pathology Wednesday, March 13 at 8 p. m. in the Louisiana State University School of Medicine.

The Washington Institute of Medicine announces two new publications: Quarterly Review with Dr. Hugh J. Jewett, Editor-in-Chief, and Quarterly Review of Psychiatry and Neurology under the editorship of Dr. Winfred Overholser.

A one week didactic and clinical refresher course in Otolaryngology has been arranged for specialists in the field, from May 13-18, 1946. Applications for registration should include school of graduation, training and experience. Check for tuition ($50.00) should accompany the application to University of Illinois College of Medicine, Chicago.

The next oral and written examinations for Fellowships in the American College of Chest Physicians will be held at San Francisco on June 29, 1946. Applicants for Fellowship in the College who plan on taking the examination should communicate with the Executive Secretary, American College of Chest Physicians, 500 North Dearborn St., Chicago 10, Illinois.

The International College of Surgeons, United States Chapter, will hold its Eleventh Annual Assembly and Convocation in Detroit, Monday, Tuesday, Wednesday, October 21-23, 1946.

Surgical clinics in Detroit hospitals will feature the first morning of the Assembly. Thereafter all the meetings, the Convocation, and the Exhibition will be held in the Masonic Temple. The Detroit Statler and the Book-Cadillac will be hotel headquarters.

OPENINGS FOR PHYSICIANS

A doctor in New Iberia would like to have an assistant for eye, ear, nose and throat practice. If interested write Box 632, New Iberia.

There is an excellent opening for a physician at Stonewall, Mississippi, in a part time industrial position. Any one interested in such an opening is advised to consult Dr. Donovan C. Browne, who is in a position to give details of this opening.

HOSPITAL SURVEY IN THE STATE

A forty member committee was appointed by Governor Davis to make a statewide hospital survey in order to get some of the monies for Louisiana which will be available under the benefits of the Hill-Burton Bill. The doctors appointed to this committee include Dr. O. P. Daly as head of the Executive Committee, Drs. W. L. Treuting, Julius L. Wilson and Isidore Cohn of New Orleans; Dr. Walter Moss, Lake Charles; Dr. Glenn J. Smith, Jackson; Dr. James Welch, Pineville; Drs. L. O. Clark and Paul Kurzweg of Lafayette; Dr. O. B. Owens, Alexandria; Dr. C. S. McDonald, Jonesboro; Drs. John Scales and Charles R. Gowen of Shreveport.

CLINICAL CONGRESS OF AMERICAN COLLEGE OF SURGEONS

The American College of Surgeons announces that arrangements have been completed for the holding of its Thirty-second Clinical Congress at the Waldorf-Astoria, New York, September 9-13, inclusive. Plans include the usual extensive program of demonstrations, scientific sessions, panel discussions, symposia, forums, Hospital Standardization Conference, medical motion pictures, business meetings, and educational and technical exhibits, which will be held in the headquarters hotel, and operative and non-operative clinics in the local hospitals.

This will be the first Clinical Congress since the meeting in Boston in 1941. Since that time, 2,744 surgeons have been received into fellowship in absentia, and to them in particular the Convocation on the opening night of the Congress will be a long anticipated event. Many of these new Fellows will have recently returned from service with the armed forces. The formal initiation ceremonies, always impressive, will be exceptionally so this year because of the large number of new Fellows admitted during the past four years who are expected to be present.

INFECTIOUS DISEASE IN LOUISIANA

The weekly morbidity report for the State of Louisiana for the week ending February 2 contained the previous four weeks' report for venereal diseases. During the month of January there were listed 895 causes of gonorrhea, 328 of syphilis, 17 of chancroid, 9 of granuloma inguinale and 5 of lymphopathia venereum. Almost all of the cases of gonorrhea were reported from military sources, as well as the chancroid and other venereal diseases, except syphilis of which only 82 came from military reports. The largest number of cases reported this week was influenza with 1317. Other diseases occurring in numbers greater than ten included 58 cases of tuberculosis, 16 of scarlet fever, 15 of unclassified pneumonia, 14 of chickenpox and 10 of septic sore throat. There were two cases of poliomyelitis listed this week and three of typhus fever, no two of which came from any one parish. The epidemic of influenza continued during the week of February 9 with 1278 cases listed, followed by 60 of measles, 51 of pulmonary tuberculosis, 16 of pneumonia, 13 of cancer, 11 of unclassified pneumonia and 10 of scarlet fever. Two further cases of poliomyelitis were listed this particular week and two of typhus fever. There was a sharp drop in the number of cases of influenza in the week closing February 16, there being 541 cases reported, but there was a marked increase in measles incidence, with 194 cases listed. Pulmonary tuberculosis likewise had increased, 72 cases having been found. The other important diseases in frequency, were as follows: 28 cases of pneumonia and chickenpox, 23 of hookworm infestation, 26 of unclassified pneumonia, 17 of septic sore throat, 13 of diphtheria and 12 of mumps. There were no cases of poliomyelitis reported this week. The last week in the month the influenza incidence was slightly increased with 594 cases appearing in the record. Measles had dropped to 97 and tuberculosis to 36. There were also reported 25 cases of unclassified pneumonia, 16 of chickenpox, 13 cases of malaria and scarlet fever. Many of the measles cases came from military sources.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported that for the week ending February 16 there occurred in the City of New Orleans 154 deaths as contrasted with 176 the previous week. One hundred and eight of these deaths occurred in the white population, 46 in the negro and 11 of them being in children under one year of age. The following week, which terminated February 23, showed a rather sharp acceleration in the New Orleans deaths; 128 white people died during this period of time and 50 colored, making a total of 178. The infant mortality remained low, however, only 13 of the total deaths being in children under one year of age. There were 10 less deaths in the city for the week which ended March 2. Of the 168 people dying this week 109 were white, 59 colored and 14 in the total were children. For the three weeks for which reports were available the number of deaths in the city has been considerable higher than the three year average between 1943 and 1945.

NEWS NOTES FROM THE OFFICE OF THE SURGEON GENERAL

Colonel Frank L. Cole, formerly Commanding Officer of Wakeman Hospital Center, Camp Atterbury, Indiana, has been assigned to relieve Colonel Michael E. DeBakey, as Director of the Surgical Consultants Division, Office of The Surgeon General.

Colonel DeBakey entered active duty in the Army in 1942 and came to the Office of The Surgeon General as Chief of the General Surgery Branch, Surgical Consultants Division.

Born in Lake Charles, Louisiana, he received his B.S., M.D., and M.S. from Tulane University, New Orleans. He received his residency training from the Tulane Surgical Service of the Charity Hospital.

Prior to entering the Army, he was Assistant Professor of Surgery at Tulane University and Associate in Surgery at the Ochsner Clinic in New Orleans. He is a member of numerous professional societies, including the Southern Surgical Association, the Society of Clinical Surgeons, and the American Association for Thoracic Surgery.

Colonel DeBakey was recently awarded the Legion of Merit for his work in the Surgical Consultants Division.

CORRESPONDENCE

The Editor
New Orleans Medical and Surgical Journal
1430 Tulane Avenue
New Orleans, La.

Dear Doctor:

As you may know, at the outbreak of the war hearings were in progress before a Committee in Congress, advocating a new Army Medical Library building to be erected at a cost not exceeding $4,750,000. These hearings were terminated during the war and are about to be resumed sometime in April. As President of the Association of Honorary Consultants to the Army Medical Library and on behalf of the Association, I am writing to ask if, through the columns of your medical journal, you will help the Army Medical Library by giving wide publicity to the coming hearings before the Budget and Congressional Committees which will determine whether a new building will be erected on Capitol Hill to house the greatest collection of medical books in the world. On account of increased costs and modernization and expansion of the original building plans, Congress is now asked for $10,000,000.

The Library has been reorganized and it is impossible longer to carry on in the present building which was built in 1887. The need for the new building has never been disputed, but unless the medical profession rallies to the aid of this vital project, which had been solidly backed by men such as William Welch and Harvey Cushing, it is possible that the laws will not be amended to provide a proper building which will enable the Library to furnish service to the medical profession throughout the country and to many parts of the world.

For your information we inclose a brief historical account of the Army Medical Library and a brochure outlining its services.

Sincerely yours,
John F. Fulton, M.D.,
President.

COUNCIL ON MEDICAL SERVICE

Work has begun already by the Council on Medical Service and Public Relations to put into effect the nationwide prepayment program for medical care of the American people. This program was presented February 17 to the American public through the press and over the radio by the Board of Trustees following joint action by the Council on Medical Service and Public Relations and the Board of Trustees in accord with the resolution passed by the House of Delegates last December. Work on this program is to be coordinated closely with the activities of the Associated Medical Care Plans, Inc., an organization of prepayment plans, just established.

In order that every physician may familiarize himself with the program and be ready to participate, here are some suggestions:

1. See press release that appeared February 17 in the newspapers.
2. See editorial in American Medical Association Journal for Saturday, February 23.
3. Read the statement of recommendations of the Council as approved by the Board of Trustees which will be published soon in The Journal of the American Medical Association.
4. Read the standards of acceptance for medical care plans.

The Board of Trustees has established under the Council on Medical Service and Public Relations a Division of Prepayment Medical Care Plans with a director and a staff who will administer the activities of the Council on Medical Service and Public Relations related to the promotion and development of medical care plans in all the states.

Start work immediately on the formation of a plan for your state or local community if such does not now exist. Help and assistance may be obtained from the Council office.

Council on Medical Service and Public
Relations of the American Medical
Association.

THE VOCATIONAL REHABILITATION SERVICE IN LOUISIANA

By The Professional Advisory Committee*

Vocational Rehabilitation is a public service for the disabled, comparable to other activities for the welfare of the people, designed to conserve the greatest of all assets—the working usefulness of human beings. There are many thousands of men and women in the State of Louisiana who, though limited in physical capacity but not necessarily limited vocationally, are making a substantial contribution to the State's productive effort. There remain thousands of such persons whose abilities can be utilized by removing the obstacles to their employment. Their numbers constantly increase. A comprehensive service is being undertaken to restore men and women, injured in industry or by accident or disease, to the economic and social position they are potentially capable of assuming.

Vocational Rehabilitation is not a new program in Louisiana. It has been in existence as a division of the State Department of Education since 1921 and for twenty-four years has assisted the handicapped in their vocational adjustment by providing guidance, vocational training, artificial appliances, training supplies, equipment, and placement and follow-up in satisfactory, self-supporting employment. The same services are rendered to the blind of the State by the Division of the Blind and Sight Conservation of the Department of Welfare.

The occupational adjustment of the disabled cannot be done on a mass basis; therefore, rehabilitation has become a personalized service which must take form according to the peculiar difficulties and aptitudes of each person. For each recipient of this service a plan is developed suited to him alone, one which would probably be unsuited to another. The rehabilitation program is made of nine integral factors, as follows:

1. Early location of persons in need of rehabilitation to allay the disintegrating effects of idleness and hopelessness.
2. Medical diagnosis and prognosis coupled with a vocational diagnosis as the basis for determining a complete individual plan.
3. Vocational guidance to select a suitable field of work.
4. Physical restoration service to remove or alleviate a disability hindering employment.
5. Physical and Occupational Therapy as a part of medical treatment when needed.
6. Vocational training to furnish skills for occupations.
7. Maintenance and transportation during training.
8. Placement in employment suited to the abilities and skills in accordance with the individual's physical condition and temperament.
9. Follow-up on job placement to afford adjustments if necessary.

Physical examinations, vocational counseling, training and placement are available to any eligible and feasible person; physical restoration, transportation, maintenance, occupational tools and equipment are provided the applicant only where well-established economic need exists.

For more than twenty years in Louisiana it has been possible to give the disabled person practically any service to rehabilitate him—except physical restoration to remove or diminish the employment handicap. It was necessary to train around the disability and place the individual in a job he could do with his defect. Now it is possible to get to the source of the handicap, the disability itself, and through paid medical and surgical services and hospitalization, eliminate or alleviate the defect and thus make the client more employable. This phase of the rehabilitation program is operated with the advice and recommendation from the medical profession and closely allied fields. A medical consultant is employed on a part-time basis to review all medical records and to give day by day consultation and recommendations on medical problems. A professional advisory committee, composed of medical specialists and representatives from other fields, such as hospital administration, physiotherapy and medical social work, has been appointed. This committee reviewed the rehabilitation program and made recommendations concerning the operation of the physical restoration phases. Their recommendations were incorporated into a state plan and cover standards, procedures and rates of payment for services.

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*The Professional Advisory Committee to the Division of Vocational Rehabilitation is composed of the following: W. L. Treuting, M.D., Chairman, Guy A. Caldwell, M.D., O. P. Daly, M.D., M. D. Hargrove, M.D., Edgar Hull, M.D., W. K. Irwin, M.D., L. E. Jarrett, M.D., Milton E. Kirkpatrick, M.D., Neal Owen, M.D., P. L. Perot, M.D., King Rand, M.D., W. T. Simmonds, M.D., Julius L. Wilson, M.D., Miss Anna Harrison, Mrs. Marion B. Stewart.

Under this program, physical restoration will be granted only on an economic need basis; *i.e.*, assistance will be granted only after it is determined that the individual is not financially able to pay for this service. It will be granted only on the advice of an accredited physician or surgeon and only when the condition is:

1. An impediment to the individual's occupational performance;
2. Relatively stable; and
3. Amenable to treatment and can be removed or remedied to a substantial degree within a reasonable length of time.

Acute illnesses and long-term chronic cases are not eligible. For example, it is not intended that appendicitis, pneumonia, or active tuberculosis be treated. Rehabilitation applicants choose their own physicians from among the doctors who are licensed to practice medicine and surgery in the State of Louisiana; and when it is a specialty service, from the doctors who are diplomates of or who are eligible for examination by the American Medical Specialty Board for that particular specialty. Physicians are paid for their services on each individual applicant. Hospitalization is purchased from hospitals that are approved by the American College of Surgeons and are paid their per-diem rates computed on the inclusive cost basis.

Other services which are available are convalescent home care, occupational and physical therapy, and prosthetic appliances. These services are furnished only on recommendation of the attending physician when, in his opinion, they are necessary and needed to obtain the rehabilitation objective for the individual.

No medical centers or hospitals are established, as medical and surgical diagnostic services and treatments are purchased from practicing physicians; and hospital care is purchased from existing public and voluntary hospitals. Training is obtained from public and private trade schools, business schools and colleges, and from in-service training on the job. No "made work" is set up for placements. Employment is secured in private business and industry and in government and state service on the customary business or merit basis.

Full-time rehabilitation field agents are located in seven cities of the State and work the surrounding parishes from the Area Office. During the past year, which ended June 30, 1945, five thousand cases were handled, or were in the process of being handled, of which fifteen hundred were successfully rehabilitated and placed on full-time, self-supporting jobs. The average income of these clients is approximately $35.00 per week; thus, they are now paying in taxes more than the cost of their rehabilitation. Many of these were dependents who have now become producers. Thus, the program has justified its operation from both the social and the economic standpoint.

PAUL G. LACROIX

1888 - 1946

Dr. Paul G. Lacroix died at Touro Infirmary on March 23. Dr. Lacroix had been on the faculty of the Tulane Medical School, from which school he graduated in 1913. He was an assistant medical director of the Orleans Parish School Board and was chairman of one of the Orleans Parish Draft Boards. He was a veteran of World War I, having served overseas as a captain in the Army Medical Corps.

Dr. Lacroix was a man of pleasant and agreeable personality. He was a man who was a friend to everyone and all members of the medical profession who knew him will feel that they have lost a personal and good friend, one who was interested in the affairs of organized medicine. He served on the board of the Orleans Parish Medical Society and was treasurer of that organization when he resigned in 1945 on account of ill health.

WOMAN'S AUXILIARY

Four pupils of the University High school, Herbert Howe, Carol Lee Freeman, Bill Doherty and Sarah Belle Pritchard, presented a debate on the subject, "People of the United States Should Have Compulsory State Medicine" at this morning's meeting of the East Baton Rouge Parish Medical auxiliary. The students were under the direction of Miss Mae Lee Denham.

Members of the auxiliary gathered at 10 o'clock at the home of Mrs. Matthew J. LaNasa, 508 St. Landry, for the social hour and the business meeting. Mrs. LaNasa was assisted by Mrs. Robert Hansen, Mrs. Henry C. Hatcher, Mrs. R. C. Kemp, Mrs. P. B. Pollitio, Mrs. Paul B. Landry and Mrs. L. J. Kern, who were members of the entertainment committee for the meeting this morning.

The Valentine theme was used in decorating, with camellias, narcissi and red carnations being used in decorating. The dining table was overlaid with a lace cloth, and refreshments were also in the Valentine motif.

During the business meeting, at which Mrs. Roy Rabalais, the president, presided, plans for the annual entertainment of their husbands on Doctor's Day were made. This will be held in May, and as is customary, the president-elect, this year Mrs. Charles Allen, Jr., will be chairman of the party.

New members welcomed to the auxiliary this morning were Mrs. Stirling Albritton, Mrs. Marie Miller and Mrs. Charles Bombet.

After the debate the members of the auxiliary participated in a question-and-answer program with four debaters, who had presented an entertaining and educational argument for both sides of the question.—(State-Times, Baton Rouge).

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BOOK REVIEWS

The Autonomic Nervous System: By Albert Kuntz, Ph. D., M. D., 3 ed. rev. & enl. Philadelphia, Lea & Febiger, 1945. Pp. 687. Price $8.50.

The second edition of this monograph appeared in 1934. A considerable amount of information has since accumulated concerning the functional activity of the autonomic nerves and their modified activity in presence of disease. Much emphasis is being placed on the structural and functional relationships of the central autonomic centers, particularly those in the hypothalamus. Newer interpretations based on the more recent knowledge, have necessitated a revision of this well-known text. Many parts have been rewritten, new illustrations have been added and the presentation improved by reorganization of some of the material.

The author has retained the same general plan of the previous edition. The first part of the book is concerned with the general anatomic and physiologic considerations of the autonomic nervous system. This is followed by a more detailed account for each system, the heart, blood vessels, respiratory, digestive system and so on. The latter part of the book is devoted to a splendid and concise discussion of autonomic neurosurgery. The chapter on general physiology has been expanded to include the results of recent investigations on the regulation of autonomic functions through diencephalic centers. In a new chapter the author correctly treats skin as a separate organ and his treatment of the anatomic and physiologic data pertaining to skin and its appendages are of particular interest. The bibliography covers 120 pages which include approximately 3500 references.

Readers familiar with the second edition will welcome the new edition and will find it a valuable guide. It is strongly recommended to those interested in getting a clear, concise picture of the intimate workings of the autonomic nervous system.

H. S. Mayerson, Ph. D.

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A Future for Preventive Medicine: By Edward J. Stieglitz, M.S., M.D., F.A.C.P. New York: The Commonwealth Fund, 1945, Pp. 77. Price, $1.00.

This small book is another of the timely studies of the New York Academy of Medicine Committee on Medicine and the Changing Order designed to show the reciprocal effects of medicine and the technical, social, economic, and political changes that have taken place in American life.

The book is essentially divided into two sections. The first, Health over the Last Forty Years, is a critical study of the accomplishments of therapeutic and preventive medicine during the twentieth century, while the second section, A Program for Preventive Medicine, charts a future course for preventive medicine.

Dr. Stieglitz emphasizes the great need for health education as a basis for personal responsibility for health maintenance which is essential to large scale health betterment. He also stresses the great need for more research with reference to the health problems of middle and old age.

Ralph H. Heeren, M.D.

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Men Without Guns: By DeWitt Mackenzie. Philadelphia, Blakiston Company, 1945. Pp. 45. Price, $5.00.

Here is a book which will be of interest to the returned medical officer as well as to the general public.

It is an exposition of the work of the Army Medical Corps as it functioned in the late war, and is divided into two parts. The first part is a narrative by DeWit Mackenzie describing the many phases of the medical corpsman's life and adventures in the different theaters of operation. It is highly individualized and makes exciting reading.

The second part is a collection of pictures painted by twelve artists commissioned especially to depict the role of the Medical Corps in the army. These illustrations are striking, factual, and unforgettable. Some depict phases in the military medical training at Carlisle Barracks. Others indicate the role of the Army Nurse, the Dental and Veterinary Corps.

The majority, however, demonstrate with stark realism, the tremendous obstacles met in caring for the sick and wounded at or near the field of battle and the splendid way in which Medical Corps' ingenuity and knowledge overcame them.

The various styles of the individual artists are interesting as to color, line, and draftsmanship with which the subjects are portrayed.

R. E. ROUGELOT, M.D.

The Woman Asks the Doctor: By E. Novak, M.D., F.A.C.S., ed. 2, Baltimore, Williams and Wilkins Co., 1944, Pp. 130. Price, $1.50.

The author has made a brave effort to explain the physiology of the female in plain and simple language to those who should be most interested. It is a difficult task to reduce complex functions and theories to a level which the ordinary woman will comprehend, and it is especially fitting that an eminent figure in his field should perform such a service.

The author is quite wary about controversial questions, and has followed "the middle-of-the road" with few examples of dogmatism. He carefully avoids examples and illustrations that lead to self diagnosis. The chapters on the menstrual function, and its disorders are noteworthy in their exposé of the unbelievable numbers of superstitions that still persist even among educated women. An effort has been made, too, to explain, and in some cases, to debunk, medical practices which have been popularized through the newspapers.

The value of this volume, in the last analysis, must be estimated by the layity, for whom it is written. That it is a valuable addition to the gynecologist is confirmed by the number of times the first edition was reprinted. This revised edition should enjoy a similar popularity.

JOHN C. WEED, M.D.

Injury and Death of Bacteria by Chemical Agents: By Otto Rahn. Normandy, Mo.; Biodynamica, 1945. Pp. 183. Price, $3.60.

The contents of this monograph are reprinted in part from "Biodynamica" and represent an attempt by the author to integrate the study of antiseptics and disinfectants which impede or destroy the activity of bacteria.

Part one deals with the mathematical interpretation of the order of death in unicellular and multicellular organisms, the death rate constant, deviations from the logarithmic order of death and the survival of resistant strains of bacteria. Survival curves of bacteria and of unicellular organisms in general are interpreted as being exponential. The rapid death of the more sensitive organisms followed by the slower rate of death of survivors causes the survivor curve, plotted logarithmically to be concave upwards. In general the mathematical treatment of the phenomenon of death in bacteria reveals the existence of fundamental laws of death of the single cell.

Part two is concerned with the mode of action of disinfectants and antiseptics on the physiology of the cell and the interpretation of what constitutes death of the organism. The mathematical expression of the death of cells by the destructive effect of chemical agents, the effect of concentration, selectivity, temperature and interfering substances is elucidated. Standardization of methods of testing unknown disinfectants is considered and the limitations of the F.D.A. methods pointed out. A new test is recommended. The selective action of antiseptics, the action of dyes as antiseptics and the effect of sulfonamides on metabolism of bacteria are treated effectively and clearly.

For the most part the book will find its greatest usefulness among bacteriologists and biologists who are primarily interested in the physiology of unicellular organisms.

M. L. LITTMAN, Ph. D.

A Text-Book of Neuro-Anatomy: By Albert Kuntz, Ph.D., M.D. 4th ed. Philadelphia, Lea & Febiger, 1945. Pp. 478, 328 fig. Price, $6.50.

The call for successive editions of this text-book, first published in 1931, is a reflection of its merit. The fourth edition follows the same general plan of its predecessors: "The material has been arranged with a view to giving the student an adequate concept of the nervous system as a whole early in the course and then to acquaint him with the simpler reflex and correlation mechanisms in the spinal cord and brain stem before taking up the long conduction pathways in their entirety and the higher subcortical and cortical mechanisms." Logical organization, simplicity of style and an abundance of instructive figures make the volume well fitted for its intended purpose as a text-book. It will prove useful also as a reference, for those who desire a brief but authoritative account of the nervous system.

HAROLD CUMMINS, Ph.D.

New Orleans Medical
and
Surgical Journal

Vol. 98 May, 1946 No. 11

CANCER OF THE LARYNX AND OF THE PHARYNX*

RESULTS OF RADIATION THERAPY AT CHARITY HOSPITAL

MANUEL GARCIA, M.D.†*
JOSEPH V. SCHLOSSER, M.D.†*
AND
JOSEPH B. MARINO, M.D.†
New Orleans

Cancer of the larynx should be of special interest to the local medical profession since the incidence of the disease is unduly high in New Orleans. A few years ago McDowell and others conducted a survey on the distribution of cancer in several American cities and made the observation that the prevalence of laryngeal carcinoma was greatest here. No explanation could be offered, but partly as a consequence of this, perhaps, Louisiana bears the doubtful distinction of being the state with the third highest mortality in the country. Cancer of the pharynx has been notable chiefly for its highly malignant course and for its failure to yield to nearly all forms of therapeutic attack. It is not surprising, therefore, that in reviewing the records of patients treated some years back we come upon results that are short of a satisfactory level. Nevertheless, the nature of these lesions is such that some encouragement may be derived from the limited success achieved and in the present report we propose to analyse the work of the first four years that the cases have been under our care.

MATERIAL

During the period 1939-1942 inclusive, 104 new cases of cancer of the larynx and of the pharynx were referred to us for treatment, but attention will be confined to 88 cases with histologic proof treated by radiation alone or not treated at all. Since there were five survivors among the 16 excluded cases, their elimination from the analysis does not favor the end results, as will be apparent later.

The deletions are dictated, rather, by a desire to determine the effectiveness of radiation, unaided by any auxiliary measure, in authentic cases of laryngopharyngeal cancer. Thus, we find that twelve cases lack histologic confirmation, though biopsies were performed in all but two. There is little doubt that these patients had malignant tumors, since nearly all died within a few months with obvious clinical signs of advanced disease. But the biopsy material was unsatisfactory for establishing the diagnosis and their inclusion in the series would vitiate the results obtained in the proved cases; consequently they must be ignored in the analysis. It is unfortunate that difficulty has been experienced in securing adequate tissue for pathologic study, for in several other instances as many as five or six biopsies were required before positive information was obtained. Needless to say, this entails considerable delay in the institution of treatment and renders the prognosis graver for the patient. Four additional cases were referred to us after operation without definite evidence of residual disease; it would be difficult to determine the extent to which radiation therapy contributed to their recovery, hence they are omitted. On the other hand seven cases with recurrence following operation or irradiation have not been deleted.

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*Read at scientific meeting of Orleans Parish Medical Society, February 11, 1946.

†From the Department of Radiology of the Charity Hospital of Louisiana at New Orleans, and the *Tulane University of Louisiana School of Medicine.

All but three of the 88 accepted cases have been traced. The cases lost to follow-up are counted as dead from cancer, and the patients who refused treatment, or who were too ill to receive anything but custodial care, are considered radiation failures. Thus we are able to assess the minimum accomplishment of radiation therapy in consecutive cases with active cancer demonstrated histologically.

CLASSIFICATION

The topographic distribution of the 88 cases included in the series is shown in table 1. The site of the lesion is indicated, although in several instances the extent of involvement made it difficult to determine the structure where the disease developed initially; however, it is nearly always possible to settle this matter during the course of treatment, since tumors under radiation therapy disappear last from their point of origin. It is rather surprising that no lesions of the post cricoid region were observed.

TABLE 1
TOPOGRAPHIC DISTRIBUTION

	No. of Cases	Per Cent
Upper Pharynx		
Rhinopharynx	6	7
Soft palate	12	14
Tonsil	14	16
Lower Pharynx		
Vallecula and base of tongue	13	15
Aryepiglottic fold	7	8
Pyriform sinus	6	7
Lateral and posterior walls of pharynx	10	11
Endolarynx		
Ventricular band	7	8
Ventricle	1	1
Vocal cord	11	12
Subglottic region	1	1
Total	88	100

The cases have been divided into three groups to facilitate the discussion by taking advantage of similarities in clinical course and response to treatment. This is simply a matter of convenience since the fact remains that each localization presents striking individual features. Some of these were pointed out by Schwartz, Butlin and others more than sixty years ago and as early as 1879 Krishaber emphasized the remarkable difference between "extrinsic" and "intrinsic" carcinomas of the larynx; unfortunately his simple classification has lost much of its utility for purposes of comparison, due to the varied manner in which it has been interpreted. Recently Leroux-Robert, and Lederman have quite correctly proposed more elaborate classifications, but the number of cases submitted to the present analysis hardly justifies the employment of either.

CLINICAL MANIFESTATIONS AND DIAGNOSTIC SURVEY

The symptomatology of the lesions under consideration is varied and can usually be correlated with the site of origin, since for each there seems to correspond a more or less characteristic pattern. Unfortunately such a pattern becomes quite clear only when the disease is well advanced. Inaugural signs are absent except in carcinoma of the vocal cord and a long silent period is the rule. Suggestive symptoms are hoarseness, sore throat, a feeling of stuffiness in the ear, and nose bleed. On the other hand Jackson and others have pointed out that hoarseness may be absent or intermittent in carcinoma of the larynx if the tumor is proliferating in structures other than the cord. The more classical symptoms of dysphagia, dysphonia, dyspnea and cough become apparent when the disease is well established, while cervical abscess and cervical nodes, not infrequently the presenting signs on admission at Charity Hospital, are clear evidence of extensive dissemination. Nearly all the patients we see manifest a severe constitutional effect, indicated by loss of weight, anemia, and in many instances, by fever, due either to tumor sepsis or to pulmonary complications.

It is imperative, therefore, that a patient under consideration for radiologic treatment should receive the benefit of a diagnostic survey as complete as that of a candidate for radical surgery, in order that the information obtained may provide a sound basis for a rational plan of treatment. We must avail ourselves of every diagnostic aid obtainable by history and physical examination, direct and indirect laryngoscopy or pharyngoscopy, radiographic studies, biopsy and any supplementary laboratory tests that will enable us to appraise the true state of affairs, both from the standpoint of the local disease and of the general condition of the patient. The actual extent of the tumor and its site of origin must be defined with all possible precision, as well as its gross architecture, the extent of infection and necrosis, the presence of invasion and destruction of cartilage or bone, and the degree to which the mobility of the normal parts has been impaired by the advance of the neoplasm. We believe that the value of radiography has been insufficiently realized and probably laminography, as developed by Leborgne, has been too greatly neglected. A three dimensional concept of the extent of the tumor can be obtained by lateral projection of the neck in combination with a laminograph. Such visualization of the limits of the new growth permits a comprehensive attack on the disease with economy and efficiency.

METASTASES

One of the essential points to be determined in the study of the patient is the presence and the extent of cervical metastases, since they affect the chance for recovery in a decisive manner. Metastatic involvement of the nodes of the neck occurred in 43 per cent of our cases on admission, and more than a quarter of the remainder developed it subsequently so that altogether 57 per cent of all our cases had metastases at some time in the period of observation. Thus metastases occurred initially in 17 of the 32 upper pharyngeal tumors, in 15 of the 36 lower pharyngeal tumors and in six of the 20 carcinomas of the endolarynx. This is somewhat lower than in the series reported by Duffy and by Taylor and Nathanson. Simple adenectomies were done in two cases before being referred to us for treatment, but no radical dissections were performed in any of the others, reliance being placed on x-ray and radium therapy for their control. This is in accord with surgical opinion. Whereas radical neck dissection is the treatment of choice in nodes secondary to intra-oral cancer satisfying the criteria proposed by Duffy, the metastases from the lesions included in the present analysis as a rule are not suitable for surgical extirpation in the opinion of Hayes Martin, and essentially the same view is held by Taylor and Nathanson. Obviously the proportion of cases eventually salvaged by irradiation in this highly malignant group is smaller than in cases suitable for surgical treatment, but there is little justification for the commonly expressed scepticism regarding the effectiveness of radiation therapy. Martin, for instance, has reported a group of 46 cases with proved metastases well five years after radiation therapy and 44 others well from two to four years. Five of our cases, that is, 13 per cent remain well three years after treatment; in three of these histologic proof of metastases was obtained. Of 19 cases with metastases treated more than five years ago three remain well.

TREATMENT

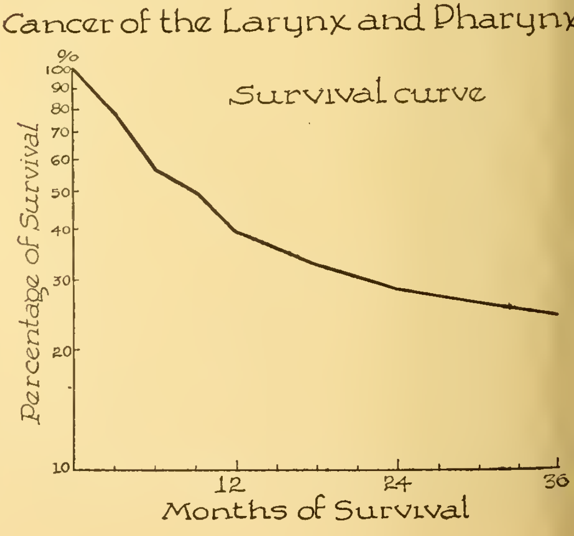
Surgery has an excellent record of success in the treatment of the early and moderately advanced stages of endolaryngeal carcinoma, (Jackson, LeJeune, Peacock and Colledge, and others) but it has met difficulties and reverses in the management of lesions arising in the other sites considered. This provided a stimulus for the original attempts at treatment by radiation. No significant improvement occurred, however, until Coutard employed the principle of protracted fractionation based on the experimental work of Regaud. This revised all previous conceptions regarding the utility of radiation in this field and must be recognized as a landmark in the therapy of these tumors—the inoperable case need no longer be considered incurable. To what extent radiation can replace operation in the favorable case cannot be determined from our material, for few of the cases seen by us had lesions technically within the scope of surgical excision; the few exceptions were represented by patients whose advanced age or impaired general health rendered them unsuitable for surgical treatment.

The Coutard method must be considered a radical therapeutic procedure and as such cannot be undertaken without careful study and preparation of the patient. It cannot be carried out in a routine fashion but on the contrary requires a high degree of individualization. The tolerance of the normal structures must be reached. Sharp reactions must be produced and the discomfort may be so pronounced that the general condition of the patient may become affected. The principal difficulty lies in judging the correct range of dosage that will fail to impair the general health of the patient without sacrificing control of the disease. The two main factors bearing on this point are the volume of tissue subjected to high dosage and the rate of administration of treatment. It is for this reason that definition of the limits of the tumor is so essential, in order that the minimum possible volume will manifest reactions of a marked degree. With careful study of the physical problem in the individual case and continuous clinical observation, the treatment can be executed with little risk of serious injury and without making the procedure too taxing for the patient. C. L. Martin, Stewart-Harrison and others have published valuable studies of the details of treatment. The optimum distribution of dosage in time remains undefined but for the last three years we have aimed at delivering a tumor dose of 4400 r ± 10 per cent in a period of 30 days when the area of the treatment ports did not exceed 50 sq. cm. A somewhat lower dosage must be employed if the area is larger, and Paterson has emphasized the importance of wide fields in dealing with the more anaplastic carcinomas and with lymphosarcomas. Berven, Cade, and Lamerton have employed teleradium therapy in place of external x-ray therapy with equal success. Stone and Larkin have made a preliminary report on the employment of neutron beam therapy in tumors of this type, and the results appear promising.

In some localizations of the disease intracavitary radium therapy may be used to advantage as a supplement to x-ray therapy, notably in carcinomas of the rhinopharynx. Supplementary treatment may be administered also in the form of interstitial radium implants, as in certain carcinomas of the vallecula, the base of the tongue, the tonsil, and metastatic cervical lymph nodes. The implant is done in a single or a double plane and the tissue dosage is between 3000 and 6000 r (gamma). Interstitial radium therapy is seldom employed in the treatment of endolaryngeal carcinoma but one of the cases in the present series received radiation in this manner by a modification of the method developed by Douglas Quick for carcinoma of the cord too extensive for laryngectomy. A laryngostomy was performed, followed by insertion of radium needles directly into the exposed tumor for a period of five days, and control of the disease has been secured for a period of nearly seven years.

RESULTS

As previously stated, all the cases included in this series were inoperable, either for technical or for clinical reasons. The trend of survival is shown in figure below; the decline in survivors is rapid at first, but



beyond the second year the slope begins to approach the horizontal, and at the end of the third year 24 per cent of the patients remain alive.

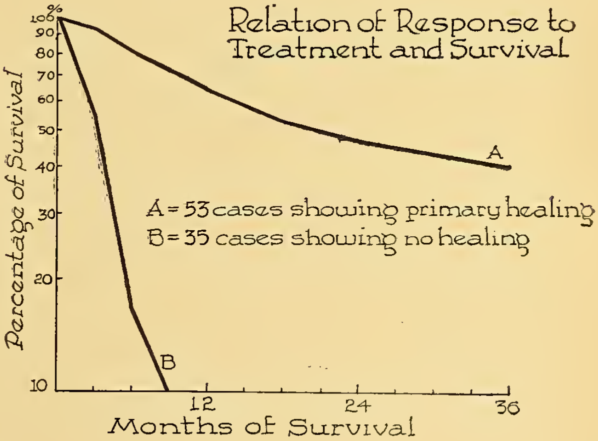
In table 2 an effort is made to elicit the prognostic influence of certain features of the disease. Various histologic types show differences in survival rate but the number of cases is too small to make the discrepancies significant. A somewhat arbitrary distinction is made between the anaplastic and the epidermoid carcinomas; we include in the former group the undifferentiated tumors and some which were classified as transitional carcinoma and as lymphoepithelioma. It does not seem worth while for the present to segregate the more keratinizing tumors from those of the so-called mucosal type, nor to seek for correlation between the histologic grade of the tumor and the outcome of treatment. Such an attempt is best postponed until a larger group of cases becomes available. It is interesting, however, that the more immature carcinomas show a better result, and that the adenocarcinomas responded well to treatment. Chance fluctuations cannot be excluded, but at least it is possible to say that adenocarcinomas are not necessarily radioresistant, as has been frequently maintained.

TABLE 2
PROGNOSTIC FACTORS

	No. of Cases	Survival Rate Per Cent
Histologic Type		
Epidermoid carcinoma	65	18
Anaplastic carcinoma	16	31
Adenocarcinoma	3	100
Lymphosarcoma	3	33
Lymphangioendothelioma	1	0
Race		
White	64	23
Negro	24	25
Sex		
Male	75	21
Female	13	38
Metastatic Involvement		
Metastases on admission	38	13
No metastases on admission	50	32
No metastases any time	39	36
Response to Treatment		
Completed treatment	77	27
With primary healing	53	40

No significant racial differences can be demonstrated, but the better results observed in women seem to be a consistent finding in series subjected to analysis. The difficulty in controlling metastatic disease in the neck is clearly reflected in the inferior survival rates attained, whether such spread was evident on admission or subsequent to control of the primary lesion.

The immediate response to treatment, and its completeness, obviously have prognostic significance. Only 77 of our cases completed treatment; the others either refused or were too ill to justify the administration of full dosage. None of these patients survived for a year, and the same was true of the ones who failed to show primary healing. The relation between response to treatment and survival is depicted in figure below. It is evident that in unselected material only about 60 per cent of the patients receive tangible benefits from our present methods of irradiation, in the form of freedom from symptoms and longer survival. Coutard has explored the possibilities of many variations in technic, in an effort to extend the range of cases that could be successfully handled, but unfortunately no concrete information has thus far been obtained. It would seem



equally important to establish objective criteria for judging the suitability of lesions before treatment is instituted, in the same fashion that we have criteria of operability, but to date no facts have been elicited that would enable us to foretell in a definite manner what would be the response to therapy in an individual case. For the present the factors best suggesting a favorable response are: limited anatomic involvement, preservation of the mobility of the normal parts, and a papillary architecture of the tumor. Yet a good result remains attainable in the absence of all these signs, and in default of any means of recognizing the unsuitable case every patient must be given the benefit of a trial by radiation. Once primary healing is achieved, late failure occurs as a result of local recurrence in 34 per cent of the cases, of metastases in 22 per cent, and of intercurrent disease in 4 per cent, while 40 per cent remain alive and well at the end of three years.

The results with respect to the localization of the lesions appear in table 3 and the rates reported by Juul and by Schinz are quoted for comparison. Lesions of the lower pharynx yield significantly lower results, and in this region lies the greatest need for improvement in our method of treatment.

TABLE 3
CARCINOMA OF THE LARYNX AND PHARYNX
THREE YEAR END RESULTS
HISTOLOGICALLY VERIFIED CASES
1939-1942

	No. of Cases	Survival Rate Per Cent
Upper pharynx	32	31
Lower pharynx	36	11
Endolarynx	20	35
Total	88	24
Schinz	300	19
Juul	88	28

In table 4 we have listed the results of treatment of endolaryngeal carcinoma reported by several institutions in this country and abroad. The general average for the 248 collected cases is 34 per cent. The rates are remarkably consistent when one considers the wide variation in geographic location, in clinical material, and in technic of treatment. Hence, contrary to general impression. the patient with laryngeal carcinoma subjected to treatment by radiation has more than a forlorn hope of recovery. If the treatment is properly administered a surprisingly good salvage can be attained with regularity. We say surprisingly good because we must not lose sight of the fact that these results are obtained in unselected material, the bulk of which is made up of far advanced lesions. It seems likely that more impressive rates could be achieved if earlier lesions were also included. Moreover, the permanency of the healing secured is shown by Coutard's cases, whose period of observation now extends over more than fifteen years.

TABLE 4
ENDOLARYNGEAL CARCINOMA
RESULTS AT THREE YEARS

	No. of Cases	Survival Rate Per Cent
Cutler	84	37
Charity	20	35
Lenz	21	33
Coutard	77	32
Schinz	37	27
Juul	9	22
Total	248	34
Surgery		
Colledge and Peacock	39	46

Permanency of Radiologic Healing
(Coutard)

	No. of Cases	Survival Rate Per Cent
Three years	77	32
Five years	142	27
Ten years	87	22
Fifteen years	31	19

The absolute results observed in 47 cases treated more than five years ago are given in table 5. Thus radiation therapy can be seen to bring about recovery in one-fifth of unselected cases of laryngopharyngeal cancer.

TABLE 5
CARCINOMA OF THE LARYNX AND PHARYNX
FIVE YEAR END RESULTS
HISTOLOGICALLY VERIFIED CASES
1939-1940

	No. of Cases	Survival Rate Per Cent
Upper pharynx	21	28
Lower pharynx	15	7
Endolarynx	11	27
Total	47	21

SUMMARY

An analysis is made of 88 cases of cancer of the larynx and of the pharynx seen consecutively, and proved histologically, at the Charity Hospital of Louisiana during the four-year period, 1939-1942. The method of treatment employed is described, prognostic features of the disease are evaluated, and the results obtained are reported. The three year recovery rate is 24 per cent, while in 47 cases observed for more than five years the recovery rate is 21 per cent.

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DISCUSSION

Dr. Leon J. Menville (New Orleans): I am sure that all of us have benefited by the magnificent dissertation given us by Dr. Garcia. I have followed with interest the splendid work he and his co-workers, Drs. Schlosser and Marino, are doing at the Charity Hospital treating cases of carcinoma of the larynx by irradiation therapy.

There is so much one can say on such an important subject, irradiation treatment of carcinoma of the larynx, and so little time to discuss it. I know that the older members of the profession, in attendance at this meeting can recall just a few years ago that a patient with advanced laryngeal carcinoma was doomed to die. Dr. Garcia and his co-workers have presented us with certain statistics which prove that even the far advanced cases have a fair chance of recovery. Their three years survival rate of cases, most of whom were in a moderate to advanced stage of the disease when treated by irradiation therapy, was 24 per cent. This percentage of survival rate compares most favorably with similar statistics by radiologists of this and other countries. I am sure that Dr. Garcia at some future time could present to us a statistical report on early cases of laryngeal carcinoma with a much greater survival rate. In the series presented by him a great number of these patients when first treated showed not only massive involvement of the oral or laryngeal cavity but metastasis to lymph structures. I believe that there were 12 per cent of such cases in his series and in spite of this handicap in treatment a creditable number survived three years.

Another thing I would like to call to your attention which sometimes occasions interference with the completion of the treatment, is the reaction which occurs on the skin of the patient. This may alarm the patient and even the referring physician. I know from experience that the referring physician at times has asked that the treatment be discontinued because the patient had been burned. It is impossible to transmit to the cancer tumor a sufficient dose of irradiation without producing skin damage. While it is not the purpose of the treatment to produce a reaction to the skin but as Dr. Garcia explained, the amount of radiation required at the lesion to produce good results will be an amount which does produce skin reaction. However, the skin changes are more or less transitory and seldom produce permanent damage, and even so who would object to some skin changes if they have a chance for a cancer cure.

Again I wish to take the opportunity to compliment Drs. Garcia, Schlosser and Marino for this most edifying and enlightening demonstration of the work they are doing at the Charity Hospital on irradiation therapy of carcinoma of the larynx.

Dr. L. A. Fortier (New Orleans): I enjoyed the paper by the authors so much I must get up and say a few words on this subject. The doctors are to be congratulated on their excellent work and the presentation as made.

It is quite true that some of these patients get well and in my experience I possibly have had eight patients with laryngeal carcinoma to remain well five years or longer. That is not a large number but still is encouraging. It is quite true too that the persons who get well require a good heavy dose of radiation and that skin changes do occur. The work is difficult and trying to the patients and to ourselves but when you do get good results it is most encouraging and gratifying.

Dr. Rudolph Matas (New Orleans): I am so much pleased with the results that radiation is getting now, as compared with what we had fifteen years ago, I want to know in what way our present technic in dealing with these cases compares with the primitive way years ago. Radiation at first was most discouraging, and only radium in laryngeal fissure accomplished results. Dr. Garcia has given us a magnificent picture of progress. I think it is the technic we are interested in. This encourages us to hope that we will go still further and surpass definitely all the effects of surgery. We had gotten to believe from experience with radiation years ago that operation gave us best result. That was my own experience.

Like all the other work the laryngologic department at the hospital has shown wonderful progress in the course of the last few years. This is due of course chiefly to the operators in that department.

I would like for Dr. Garcia to give us information about the technic of interlaryngeal application of x-rays.

Dr. Manuel Garcia (in closing): We feel honored by Dr. Matas' question.

In the preparation of this report we reviewed all records of carcinoma of the larynx at Charity Hospital. The first was recognized in 1875 and from 1894 on several were treated by tracheotomy and by other operations, but the first successful laryngectomy was done in two stages in 1914 by Dr. Matas, assisted by Dr. Maes. The patient spoke only Spanish and his name was Antonio Morales. I know therefore how far Dr. Matas dates back his interest in this subject.

Our understanding of the dosage of radiation that constitutes adequate treatment is the product of the last ten years. We had to rely naturally on a period of trial and error and the original work along these lines done by Coutard in 1921 was not duplicated anywhere else to my knowledge until seven years later. A great many technics have been tried. The essence of modern x-ray therapy is to administer a very large dose, which is associated with the production of reversible marked reactions in the normal structures. This requires a very precise delineation of the limits of the tumor, in an effort to determine the exact extent of the disease, so that by including the minimum possible volume of tissue in the x-ray beams high dosage can be given with relative safety. The difficulty at first was that enormous areas, extending from the zygomatic arch to the clavicle, were irradiated, and under such circumstances any attempt to cause changes in the tumor resulted in alarming effects on the normal structures. Now we know that we can get by with even higher ranges of dosage safely provided we have a small volume of tissue to irradiate, and for that reason lay much emphasis on the preliminary study of the patient. The object of treatment at present is to administer 4400 r in about 30 days with a variation of ± 10 per cent. Naturally it is necessary to watch the patient very closely throughout the period of treatment. I think the radiologist has to do that himself. He cannot rely on the assistance of the laryngologist since he is not familiar enough with the reactions of normal and neoplastic tissues nor with the modifications that must be introduced when necessary to avoid complications without sacrificing control of the disease. So that the progress in radiation therapy depends not on improvement of equipment or in standardization of technic but on clinical judgment and on a knowledge of the biological reactions produced by radiation.

We feel equally grateful to Dr. Fortier and Dr. Menville for their kind remarks and for their valuable contribution to the discussion.

THE NEED FOR A BETTER APPRECIATION OF THE VALUE OF MULTIPLE PRECORDIAL LEADS*

GEORGE E. BURCH, M.D.†
NEW ORLEANS

The use generally of precordial leads clinically is governed by empiricism rather than by an appreciation and application of the present day knowledge of the processes of depolarization and repolarization. The empirical use of a single or only a few precordial leads results in an inadequate survey of cardiac injury and, often a false security in diagnosis. The latter error is particularly important when it is realized that an electrocardiographic inventory of the myocardium consisting of the standard leads and a grossly inadequate number of precordial leads is usually accepted as a complete survey with religious faith. Obviously, an extensive electric exploration of the precordium is not indicated routinely, but in many patients in whom an electrocardiogram is advised a complete exploration is imperative to insure a proper evaluation of the cardiac problem. Not only can the electrocardiogram, through a proper integration of the limb and precordial leads, render aid in the diagnosis of cardiac disease, but it can outline the extent of lesions. Such a survey often locates them precisely, indicates the course of the pathologic process and thereby aids in the management and prognosis of the clinical state. It is the purpose, through the medium of myocardial infarction, to demonstrate in a few patients selected from many similar instances some of the principles governing the use of multiple precordial leads.

THEORETICAL CONSIDERATIONS

The electrocardiogram enjoys a significant role in the clinical management of myocardial infarction because with infarction there results definite alterations in the orders of depolarization and repolarization which are rather specific and measurable. Without entering into a discussion of the mechanisms concerned, some of the electrical forces somewhat peculiar to infarction which influence the electrocardiographic patterns and the placing of electrodes are mentioned. As pointed out by Bayley[1] and discussed by Burch and Winsor[2] some of the manifest electric forces are shown diagrammatically by figure 1. Figure 1A shows the three zones which follow infarction. The more centrally located zone is zone of dead muscle or *Dead Zone.* Because of death it is physiologically inactive. Immediately surrounding this zone is a *Zone of Injury*, that is, an irregular shell of muscle encasing the dead zone. The muscle in this zone nearest the dead zone is closer to death than that farthest away. Because of the injury, "currents of injury" result. An irregular shell of muscle encloses the zone of injury. This shell is not seriously injured but it is not normal. It suffers from some impairment of blood supply or is ischemic. It is known as the *Zone of Ischemia.* That portion of muscle near the zone of injury is more ischemic than the portion adjacent to normal muscle. Myocardial infarcts are usually subepicardial while subendocardial infarction is relatively rare, incidences based upon peculiarities of circulation.

When the exploring electrode is placed directly over an area of infarction the disturbances in the orders of depolarization are easily recorded. During depolarization the electric force of depolarization is stronger in the opposite wall than in the infarcted wall since there is more mass of muscle depolarization in the normal opposite wall than in the injured one. This results in a field of relative negativity in the region of the precordial or exploring electrode. Therefore the depolarization wave (QRS complex) in the completed electrocardiogram shows no R wave, the initial wave being a negative wave (QS wave). This QRS change is indicative of infarction *per se*, that is, dead muscle or the *Dead Zone.* The absence of an R wave may be interpreted as evidence of a "physiologic hole" in the heart.

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*Read at Scientific meeting of the Orleans Parish Medical Society, January 28, 1946.

† From the Department of Medicine, Tulane Medical School and the Ochsner Clinic. Aided by a grant from the Helis Institute for Medical Research.

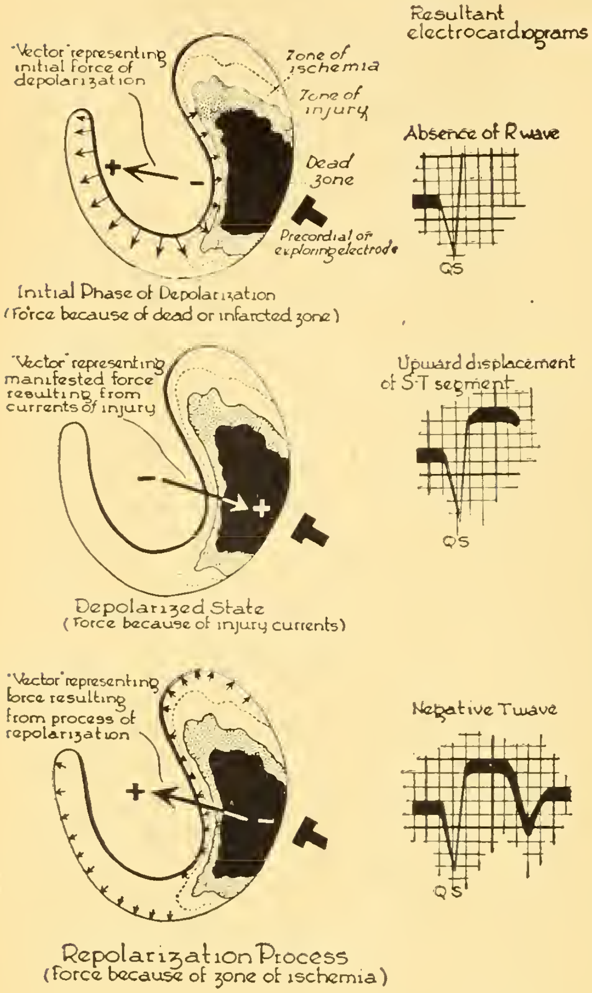
Resultant electrocardiograms
"Vector" representing initial force of depolarization
Zone of ischemia
Zone of injury
Dead zone
Precordial or exploring electrode
+
-
Absence of R wave
QS
Initial Phase of Depolarization
(Force because of dead or infarcted zone)
"Vector" representing manifested force resulting from currents of injury
-
+
Upward displacement of S-T segment
QS
Depolarized State
(Force because of injury currents)
"Vector" representing force resulting from process of repolarization
+
-
Negative T wave
QS
Repolarization Process
(Force because of zone of ischemia)

Figure 1. A diagrammatic representation of the electric forces which would manifest themselves strongly on an electrode placed directly over an area of subepicardial infarction.

A shows how the dead zone which cannot be depolarized upsets the normal balance of depolarization forces, thereby reducing the force produced in the region of the infarct. The resultant "vector" force is directed away from the exploring electrode thus creating a region of strong relative negativity around the electrode. This results in an initial negative or QS wave in the QRS complex (the depolarization process) with an absence of an R wave in the completed electrocardiogram.

B shows how the zone of injury results in a manifested force when the myocardium is in a depolarized state. This manifested force involves a consideration of the compensating current used in controlling the string shadow. It is directed toward the exploring electrode and creates a field of relative positivity around the electrode. This results in an upward displacement of the S-T segment.

C shows how the zone of ischemia delays the process of repolarization and thereby repolarization begins in the subendocardial region in the infarcted portion of the heart. With the order of repolarization progressing from endocardium to epicardium in the wall with the infarct and from the epicardium to the endocardium in the opposite noninfarcted wall the resultant electric force of repolarization is directed away from the exploring electrode. This creates a field of relative negativity in the region of the electrode and a negative or inverted repolarization wave or T wave is inscribed in the completed electrocardiogram.

If the exploring electrode were placed on the wall opposite the area of infarction the resultant forces discussed above would influence it oppositely and the components of the electrocardiogram would show opposite changes.

Part B of figure 1 shows the electric force which manifests itself when the myocardium is in the depolarized state. Burch and Winsor[2] have explained in detail the mechanism for this force. The S-T segment is inscribed during the interval between periods of depolarization and repolarization. Since the manifested force is directed toward the exploring electrode creating a field of relative positivity around the electrode there results an upward displacement of the S-T segment. This force exists because of the "currents of injury" present in the Zone of Injury. Therefore an S-T displacement indicates injury.

Part C of figure 1 shows the electric force responsible for the negative T wave in infarction. The process of repolarization within the normal wall opposite that with the infarct begins at the epicardial region. In the region of the infarct the surrounding shell or zone of ischemia impairs the onset of repolarization. As a result repolarization begins in the subendocardial regions and migrates out toward the epicardium. The resultant electric forces of the repolarization processes are directed away from the exploring or precordial electrodes thus producing a field of relative negativity around the electrode. This is associated therefore with the inscription of a negative wave of repolarization (T wave) in the completed electrocardiogram.

It is quite obvious from the discussion above and figure 1 that in order for an exploring electrode to pick up these forces it must be placed directly over the infarct for then the electric forces are directed normally to the electrode. If the electrode is placed at right angles to these forces or 90° away from the epicardial surface of the infarct, little or no influences on the electrode result. If the electrode is placed only over the zone of ischemia, T wave changes alone are noted, and so on. With these concepts in mind it is simple to realize how the proper use of the exploring electrode to explore the surface of the heart can result in not only discovering an infarct but also in delineating it rather precisely. The electrocardiograms discussed below illustrate this.

Therefore, (1) *QRS changes are the only electrocardiographic signs of death of cardiac muscle or infarction;* (2) *S-T segment shifts indicate the existence of myocardial ischemia.* A "vector" drawn from the centroid of the infarct to the centroid of the heart may be employed to represent the initial depolarization (QRS) force of *dead* (infarcted) muscle. A "vector" drawn from the centroid of the heart to the centroid of the infarct may be employed to represent the manifest electric force developed because of the zone of *injury.* And a "vector" drawn from the centroid of the infarct to the centroid of the heart may be employed to indicate the electric force produced by the zone of *ischemia.* These "vectors" may be analyzed vectorially from the completed electrocardiogram. These "vectors" may be constructed quite precisely both for the frontal plane of the body and spatially.

ELECTROCARDIOGRAMS

The five sets of electrocardiograms shown in figures 2 and 3 indicate some of the principles just mentioned.

The standard leads of the three groups of electrocardiograms of patients number 1, 2, and 3 (figure 2) do not definitely indicate myocardial infarction. Although such changes are encountered in myocardial infarction, these changes may be found in other types of myocardial disease. The absence of an R wave, an elevation of the S-T segment and a negative T wave in lead 4V in patient number 1 (figure 2) does show an area of infarction immediately under the precordial electrode, that is, at the apex of the heart. Even though 4V does indicate infarction, the size of the infarct remains unknown. However, leads V$_1$, V$_2$, V$_3$, V$_4$, and V$_5$ show changes similar to that described for 4V, while lead V$_6$ shows an R wave. Therefore, the infarct

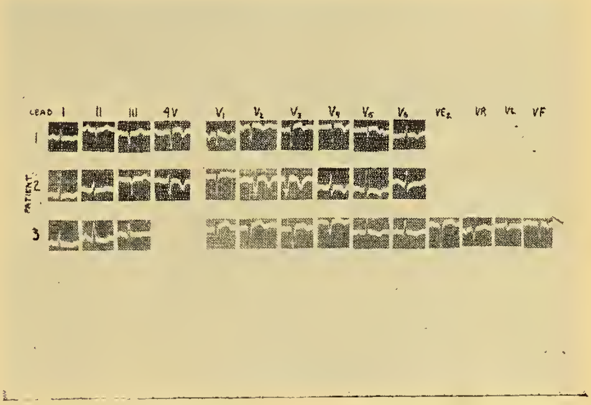

Figure 2. Electrocardiograms recorded on three separate patients who presented typical clinical pictures of myocardial infarction (consult text for details).

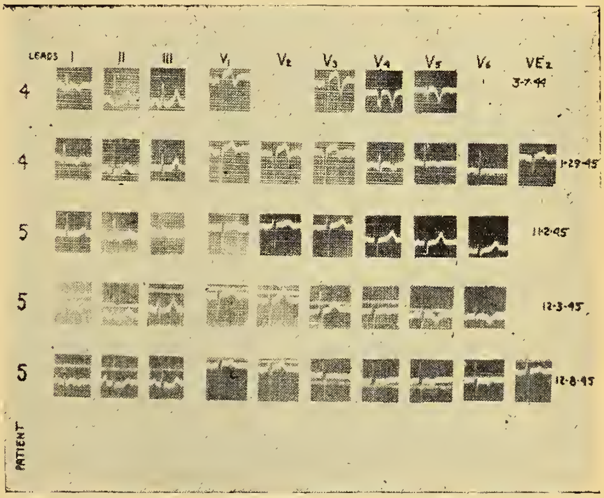

Figure 3. Serial electrocardiograms recorded on two patients with typical clinical pictures of myocardial infarction (consult text for details).

extends over the anterior surface of right ventricle, over the interventricular septum anteriorly and over to the medial portion of the left ventricle. It does not involve the free wall of the left ventricle. Since there is an S-T elevation a negative T wave in lead V_6, the zones of injury and ischemia extend to the free wall of the left ventricle. Incidentally, lead I does not show the typical changes of infarction because the area of infarction does not involve the lateral aspect of the left ventricle. The infarct is anteroseptal and therefore the electric force of depolarization concerned with the dead zone is directed perpendicular to the frontal plane of the body. Such a force does not influence the standard leads *(vide supra)*. The limb leads and precordial leads at a level below the level of the fourth chondrosternal junction should have been included in order to outline the basal and apical extents of the infarct.

The standard leads and lead 4V of patient number 2 (figure 2) do not definitely indicate infarction because of the absence of definite diagnostic QRS changes. The rounded S-T segment and negative T in 4V suggest zones of injury and ischemia near the apex of the heart, immediately deep to the precordial electrode. On the other hand, the absence of an R wave, the elevation of the S-T segment and the negative T wave in leads V_1, V_2 and V_3 indicate a strictly anterior infarct or an infarct of the anterior wall of the ventricle. The negative T waves in leads V_4, V_5 and V_6 indicate that the zone of ischemia extends all the way over to the free or lateral wall of the left ventricle while the presence of an R wave in these three leads shows that the dead zone does not extend to the left beyond the interventricular septum. Like in patient number 1, explorations should have been done at higher and lower levels in order to outline the extent of the lesion basally and apically.

The electrocardiogram of patient number 3 (figure 2) does not show definite signs of infarction although the broad slurred Q_3 wave may suggest a posterior infarct. However, the absence of an R wave in leads V_1, V_2, V_3 and V_4 without associated S-T and T wave changes of zones of injury and ischemia indicate an old strictly anterior infarct in a similar location to that described for patient number 2. The absence of an R wave in leads VE_2 and V_F with the S-T segment and T wave changes of injury and ischemia in lead V_F indicate a fairly recent diaphragmatic and posterior infarct (since the epicardial surface of the lesion in posterior infarct faces the left leg the characteristic changes are found in lead V_F while an infarct of the free border of the left ventricle faces the left arm producing the characteristic changes in lead V_L). The clinical picture supports the findings. In 1939 the patient had a typical clinical picture of infarction with electrocardiographic changes of anterior infarct. Six weeks ago he again experienced a typical clinical picture of infarction which the accompanying electrocardiogram shows to be posterior. Like in the two patients described above explorations should have been made at higher levels.

The electrocardiograms of patient number 4 (figure 3) show typical changes of infarction in the standard leads as well as in the precordial leads. On March 7, 1944, several weeks after the onset of the infarct leads V_1, V_3, V_4 and V_5 show the infarct to extend across the entire anterior surface of the heart. Although a lead V_6 was not recorded, the small R wave in V_5 showed that the left border of the area of infarction was not very far over on the left side of the left ventricle. This is further supported by the relatively small Q wave and large R wave in lead I. The S-T segment and T wave changes in the precordial leads indicate the presence of small currents of injury and a highly developed zone of ischemia. About 10 months later (January 29, 1945) the standard leads show relatively little change while the precordial leads show a significant amount of healing. The healing of the infarct with scar formation has reduced the size of the dead zone considerably, evidenced by the presence of well developed R waves in leads V_4, V_5 and V_6. The zones of injury and ischemia have practically disappeared, a contention supported by S-T segments which are about normal and T waves which are only slightly negative in leads V_4, V_5 and V_6. The absence of an R wave in VE_2 shows the infarct to have extended fairly low. Again, as in the other patients the standard leads were insufficient in establishing the extent of the area of infarction. In addition, if the standard leads alone had been recorded the marked degree of healing would have remained unknown, thus emphasizing also the limitations of the standard leads in the proper evaluation of the progress of the disease.

The three sets of electrocardiograms of patient number 5 (figure 3) are quite interesting. On November 2, 1945, the three standard leads and leads V_1 to V_6 were recorded during a periodic health examination. The tracings were essentially within normal variations. Approximately one month later she presented a typical clinical picture of myocardial infarction. Two days later (December 3, 1945) the second group of tracings were made. Significant changes were found. For example, in lead I the R wave became much reduced in amplitude and a very small Q wave developed, the S-T segment became elevated and the T wave inverted. The changes in this lead and in lead III indicated an infarct involving at least the lateral or left surface of the left ventricle. In the precordial leads, however, the R wave in leads V_5 and V_6 were reduced in amplitude but they certainly were not absent. There was a slight elevation of the S-T segment in leads V_4, V_5 and V_6 with a negative T wave in these three leads. The tracings taken five days later (December 8, 1945) checked these findings and showed signs of reversion of the electrocardiogram toward normal, indicative of healing. There is no doubt that this patient has an infarct. The location is not known. The "special" type of Q wave_3 in lead I tends to rule out infarction within the septum unless it is small or near the border of the septum. Certainly there is no large dead zone of muscle that reaches the epicardium over the areas explored.[11] There were zones of injury and ischemia on the anterolateral aspect of the left ventricle (S-T segment and T wave change in leads V_4, V_5 and V_6). It is possible that there was a high lateral infarct, a fact that could have been evaluated by leads recorded from a higher level. A more likely location is an intramural infarct located in the anterolateral wall of the left ventricle. This is supported by the relatively low R wave in leads I, V_5 and V_6. The zones of injury and ischemia which would surround such an infarct conform with such an interpretation. An intramural infarct may reduce the amplitude of an R wave but is usually associated with a definite R wave.

COMMENT

From the electrocardiograms and theoretical discussions above, it becomes obvious that the use of standard leads alone or standard leads and a single apical lead is not sufficient properly to evaluate the electrocardiographic status of a patient. Obviously, it is not necessary or even possible to provide a complete survey of the entire surface of the heart routinely. On the other hand, if a patient presents a clinical picture strongly suggesting cardiac disease, such as an infarct, a detailed survey should be made in an effort to identify and delineate the lesion. The study should be repeated in detail as often as the clinical progress of the disease warrants. Until a complete exploration has been made in a patient suspected of infarction the electrocardiographic interpretation should be withheld. For example, if only the standard leads and lead 4V had been recorded in patient number 2, the electrocardiogram would have been misleading. The patient would have been considered to have no definite infarct or only a small one, too small to result in typical electrocardiographic changes. Furthermore, the lesion would not have been localized. Adequate precordial leads overcame these difficulties. A good rule to follow is: Any patient who presents a clinical picture which is sufficiently suggestive of myocardial infarction should have not only the standard leads but the conventional six V leads and the three limb leads as well. A strict adherence to this rule will avoid many difficulties. In patients who present themselves for routine examination and who present no cardiac manifestations suggestive of heart disease it is only necessary to record the standard leads. Should these standard leads lead to suspicion a more complete survey should be made. If one's practice will permit, it is a good idea to record all three leads, the six *V leads* and the three limb leads routinely.

As pointed out previously, exploration of the precordium from the usual six points is often not sufficient. More exploration should be done depending upon the data accumulated by means of the more conventional leads. It is somewhat unfortunate that the standardization of the precordial leads carries with it the idea that they constitute a complete exploration. The extent of exploration is to be determined by the problems of the individual patient.

An integration of the depolarization and repolarization processes, the anatomy of the heart, and cardiac physiology are necessary to appreciate the applications of electrocardiography in cardiac disease. With an adequate knowledge of the principles underlying these factors a proper correlation and interpretation is not difficult. These principles should always be applied in order adequately to evaluate a patient.

SUMMARY

The electrocardiograms of five patients selected from a relatively large group were presented to illustrate the inadequacy of the three standard leads and a single apical lead for the proper evaluation of myocardial infarction. The forces responsible for the electrocardiographic changes characteristic of infarction were briefly discussed. Multiple precordial leads were presented to show the value of these leads in the diagnosis, delineation and management of myocardial infarction. A patient who presents a clinical picture sufficiently characteristic of infarction to warrant an electrocardiogram should have a complete exploration of the heart to ensure an adequate electrocardiographic survey.

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DISCUSSION

Dr. J. L. Gouaux (New Orleans): I would like to say that I agree absolutely with what Dr. Burch has said regarding the importance of precordial leads. At Charity Hospital we started using the single precordial lead about 1940 and I do not have the exact figures—I have never gone over them, but I do not think there is any question about the value of the single precordial lead, in giving a higher percentage of positive diagnoses in patients with coronary disease, either infarcts or ischemia. I have always felt that the diagnosis of ischemia is as important as infarct. The percentage of positive electrocardiographic diagnoses has increased and lately we have been using from three to four to five precordial leads routinely.

Another thing we found out is that you can not select patients for additional study. For a while we thought this possible, but inspection of the first electrocardiogram and in terms of that and the patient's clinical history to ask for additional leads to be made, but you run into so many complicating types of pictures; persons with no history of coronary disease and positive electrocardiograms, that we have stopped atttempting to select patients for study, and take multiple leads on all patients.

I do not know any more that I can add except one suggestion about electrocardiograms and that is in regard to having serial electrocardiograms of patients suspected of coronary closure without infarct. In our ordinary work we see pictures barely suggestive, that is, without definite signs either of infarct or ischemia and we ask for serial electrocardiograms. In ordinary practice we take pictures twice a day or every two or three days following a coronary attack. Often times the meaning of serial electrocardiograms is misinterpreted. I prefer three or four or six in the first week instead of the same number over a period of three or four or five weeks. These are often more valuable during the first week of observation.

Dr. George E. Burch (In closing): I have nothing very much to add except to thank Dr. Gouaux for his remarks. I would like to indicate again that if a patient presents a clinical picture which is sufficiently suggestive of infarction that warrants an electrocardiogram then that is an indication for complete exploration. As Dr. Gouaux indicated, it is sometimes impossible to select patients for exploration with accuracy, and we have to apply certain general rules in order not to miss any areas of involvement.

ROENTGEN PELVIMETRY*

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NEW ORLEANS

In spite of its limitations, pelvimetry has been considered an important phase of obstetrics. Roentgen pelvimetry came into prominence following the contributions of Mackenzie Davidson,[35] Manges,[36] Johnson,[29] Thoms,[46] Ball,[6] Snow[45] and others. In their classic and exhaustive work, Caldwell and Moloy[8-11] have established practical and clinical significance to the mathematical figures obtained by providing a simple and accurate classification of pelvic types and detailed information regarding the mechanism of labor in each type.

The Johnson method of stereoroentgenometry was selected because of its accuracy, its adaptability to available x-ray equipment and because it permitted stereoscopic study of the structure of the maternal pelvis and the relative size, shape and position of the fetal skull. The early work of Caldwell and Moloy was accomplished by the use of the Johnson technic and their present method of precision stereoscopy emphasizes the importance of the third dimension. While the Johnson method was found entirely satisfactory for accurate measurement of the pelvic diameters, cephalometry was not possible in all cases because the position of the fetal skull did not always permit measurement of useful diameters. Movement by the fetal skull between stereoscopic films, although readily noted, also prevented accurate measurement. The factor of fetal skull movement is inherent in all technics requiring multiple exposures. In 1935, Ball introduced volumetric pelvimetry and cephalometry and this provided the most practical method, within reasonable limits of error, of estimating fetal skull size. The combination of stereoscopic study and pelvimetry, volumetric cephalometry and sacral measurements has provided much valuable information.

Roentgen pelvimetry and cephalometry should be considered supplementary aids to the obstetrical analysis of the individual case and should never replace clinical examination, sound judgment and obstetrical experience. It is especially important that a final decision should not be based upon relative and arbitrary mathematical figures resulting from the contraction of one diameter of the pelvis. The pelvic shape and structure, the position and presentation of the fetus and the age and condition of the patient merit serious consideration. The question of adequate available space anterior or posterior to a contracted transverse diameter will depend upon the other diameters, sacral measurements and stereoscopic study of the subpubic arch, sacrosciatic notch and the side walls of the pelvis.

The four fundamental types of obstetrical pelves have been described by Caldwell and Moloy[8] as follows:

"The android or 'male' type previously designated as the 'funnel' variety presents a wedge or heart shaped inlet, narrow fore pelvis, protruding symphysis, short posterior sagittal diameters and short anterior transverse diameter of the inlet, long sacrum and converging sidewalls.

"The anthropoid or 'assimilation pelvis' presents an oval inlet with long antero-posterior and posterior sagittal diameters and short transverse diameters.

"The platypelloid or 'flat' pelvis presents a transverse oval inlet with long transverse and short antero-posterior diameters. The posterior sagittal diameters correspond to those of the average gynecoid form.

"The gynecoid or typical 'female' pelvis presents a round or slightly oval inlet, wide fore pelvis with relatively long posterior sagittal diameters, smoothly curved sacrum and an adequate sacral angle."

In a series of 500 cases, the android form occurred in 29.4 per cent, the anthropoid in 19.2 per cent, the platypelloid in 5.2 per cent and the gynecoid in 46.2 per cent.

The classification of Caldwell and Moloy will prove valuable if one recalls that al-

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most 50 per cent of pelves present mixed forms. The pelvis can thus be divided into anterior and posterior segments by a plane passing through the transverse diameter of the inlet and the bi-ischial diameter. Thus, the android-gynecoid form means that the posterior segment is of the android type and the anterior of the gynecoid. Many combinations of the four fundamental types of pelves are possible. The asymmetric and the generally contracted pelvis fall into one of the four fundamental groups or the various combinations thereof.

In a previous study[2] an effort was made to correlate the results of stereoroentgenometry and clinical experience and the methods of delivery were investigated in 379 cases. In a group of 205 cases with normal measurements, 203 or 99 per cent delivered normally. Of the 66 cases with measurements showing contraction of more than 10 mm., 14 or 21.2 per cent had normal deliveries, 47 or 71.2 per cent were delivered by section and 4 or 6.0 per cent by high mid forceps. In a series of 45 patients with contracted bi-ischial diameters of 10 mm. or more, only 3 or 6.6 per cent delivered normally.

In their series of obstetrical patients Steele and Javert[44] found the pelvic diameters normal in 85 per cent and contracted in 15 per cent by clinical examination. Following x-ray examination, normal pelvic diameters were found in only 70 per cent and contracted diameters in 30 per cent. In the present series the cases were divided into normal pelves with normal or greater than normal diameters; borderline with from 5 to 10 mm. contraction in one or more diameters; and into a contracted group with 10 mm. or more contraction in one or more diameters. Normal diameters occurred in 55.9 per cent, border line pelves in 27.9 per cent and contracted pelves in 16.1 per cent (table 1).

TABLE 1
CLASSIFICATION OF CASES

	No. of Cases (1,767)	Per Cent
Normal diameters	989	55.9
5 to 10 mm. contraction	493	27.9
10 mm. or more contraction	285	16.1

Table 2 shows the average pelvic diameters as determined by the Johnson method of stereoroentgenometry. The average normal figures obtained for the diameters of the pelves of cases that delivered normally show an increase of from 0.1 to 1.7 mm. Table 3 contains the measurements of the diameters obtained in each of the four fundamental types of pelves.

TABLE 2
AVERAGE PELVIC DIAMETERS

Diameters	1,767 Cases	Williams
Inlet		
Anterior-posterior	11.82 cm.	11.0 cm.
Transverse	13.62	13.5
Anterior transverse	10.1	
Right oblique	12.92	12.75
Left oblique	12.95	12.75
Mid-plane		
Antero-posterior	11.59 cm.	11.5 cm.
Transverse	10.45	10.5
Posterior sagittal	4.51	
Outlet		
Antero-posterior (to sacrum)	11.59 cm.	11.5 cm.
Antero-posterior (to coccyx)	10.01	9.5
Transverse	11.23	11.0
Posterior sagittal	7.5	
Sacrum		
Chord	11.5 cm.	
Index	2.2	
Angle	72°	

The end points of the majority of the pelvic diameters were selected according to Williams.[50] The antero-posterior diameter of the inlet was measured from the superior symphysis pubis to the mid-point of the reflections on the sacrum of the continuation of the ileopectineal lines. The posterior sagittal diameter of the inlet was measured from the same sacral point to the mid-point of the transverse diameter of the inlet. This aids in the classification of the pelvis as it is shortened in the android, lengthened in the anthropoid and equal in the platypelloid and gynecoid types. The anterior transverse diameter of the inlet is measured across the ileopectineal eminences and is useful in indicating the available space in the forepelvis. It is shortened in the android and anthropoid types and lengthened in the platypelloid. The posterior sagittal diameters of the mid-plane and outlet, measured from the tip of the sacrum or the most distal fixed segment of the

TABLE 3
DIAMETERS OF THE FOUR FUNDAMENTAL TYPES OF PELVES

Diameters	Android	Anthropoid	Platypelloid	Gynecoid
Inlet				
Antero-posterior	12.4 cm.	14.0 cm.	9.8 cm.	11.7 cm.
Transverse	11.5	10.2	14.7	13.6
Anterior transverse	8.2	7.8	11.3	9.9
Right oblique	11.2	12.0	11.6	12.8
Left oblique	11.2	12.2	11.4	13.0
Posterior sagittal	2.9	6.8	3.9	4.9
Mid-plane				
Antero-posterior	10.8 cm.	12.7 cm.	10.0 cm. (525)*	11.5 cm.
Transverse	9.4 (440)*	8.2 (295)*	11.5	10.6 (625)*
Posterior sagittal	3.0	5.9	3.2	4.5
Outlet				
Antero-posterior (to sacrum)	10.8 cm.	12.7 cm.	10.0 cm.	11.5 cm.
Antero-posterior (to coccyx)	9.0	10.6	8.6	9.8
Transverse	10.5	9.5	11.5	11.2
Posterior sagittal	5.5	7.9	6.0	7.6
Sacrum				
Chord	12.0 cm.	10.0 cm.	10.2 cm.	11.7 cm.
Index	1.7	0.8	1.9	2.4
Angle	76°	82°	80°	70°
Fetal Skull				
Fronto-occipital	11.2 cm.		11.5 cm.	11.8 cm.
Sub-occipito-bregmatic	9.2			9.6
Biparietal		9.7 cm.		
Circumference	33.0	31.0	32.8	32.0
Volume	610 c.c.	500 c.c.	600 c.c.	560 c.c.

*Volumetric Capacity in c.c.

coccyx to the mid-points of the bi-ischial and intertuberous diameters respectively, are indicators of the available space in the posterior pelvis at these levels. It has been stated that when the sum of the bi-ischial and posterior sagittal diameters at the mid-plane is less than 13.5 difficult delivery may be expected. At the outlet 17 has been considered the arbitrary minimal figure. It is obtained by the addition of the lengths of the intertuberous and posterior sagittal diameters.

Considerable attention has been directed to a study of the length, inclination and curvature of the sacrum. A line drawn from the sacral promontory to the tip of the sacrum subtends the curve of the sacrum and has been designated the "chord." In this series the chord varied from 7.8 cm. to 17.2 cm. with a mean of 11.5 cm. A perpendicular from this line or chord to the deepest portion of the sacral curve has been called the "sacral index." The average of this measurement has been found to be 2.2 cm., with variations from 0 to 5.9 cm. The sacral angle is measured at the intersection of the chord and the plane of the inlet, and in the average case measures 72° with a variation from 51° to 98°.

Obstetricians have long recognized the hazards introduced by the long straight sacrum set at a small angle to the pelvis. Another source of difficulty has been experienced in the case of the well-curved short sacrum in which the radius of the arc of curvature is considerably less than that of the fetal skull. The effect in this case is similar to that of the straight sacrum since the curve is too small to accommodate the fetal skull. The relationship of the sacral chord, index and angle should be considered especially in those borderline cases where an adequate posterior pelvis is essential for safe delivery.

The size and shape of the sacrosciatic notch determines the space available in the posterior segment of the inlet. In the android form of pelvis the notch is relatively narrow and angular at its apex. In the anthropoid pelvis the notch is relatively long and more curved. The platypelloid form presents a notch which is similar in type but shorter than the gynecoid or female type. The posterior sagittal diameters and the sacral measurements are indicators of the size and shape of the sacrosciatic notch.

The subpubic arch varies considerably from the narrow angular form of the android pelvis to the curved arched type of the female pelvis. It is not always a reliable index to the pelvic type. The size and shape of the subpubic arch is closely related to the forepelvis and to the inclination of the sidewalls of the pelvis. The sidewalls may be divergent, straight or convergent. Considerable difficulty is experienced in attempting to express the form of the subpubic arch in mathematical terms. The inclination of the sidewalls should always be considered in connection with the measurement of the bi-ischial diameters in order to determine whether contraction of this diameter is the result of large ischial spines or of a narrow converging pelvic cavity.

CONCLUSIONS

1. Roentgen pelvimetry is most valuable when closely correlated with clinical observation.

2. The Johnson method of stereoroentgenometry may be employed to provide a series of accurate mathematical measurements which may be utilized as a basis for the anatomical study of the obstetrical pelvis.

3. Stereoscopic examination is a valuable aid in the study of the structure of the maternal pelvis and of the size, shape and presentation of the fetal skull.

4. The Ball method of volumetric cephalometry is a practical technic for the determination of fetal skull size if allowances are made for the possibility of fetal skull movement.

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DISCUSSION

Dr. E. L. King (New Orleans): What I would like to say is a few words about the clinical side of pelvimetry. First of all in what cases is it indicated? Is it necessary to have x-ray pelvimetry in every obstetrical patient? Not at all. We should rely first of all upon the clinical interpretation of that pelvis. I think we should not overlook the importance of the old fashioned pelvimetry that we have been trying to teach for many years. It is not absolute as far as that is concerned but by careful clinical pelvimetry we get a fairly good idea as to the pelvis and also in that way get some idea as to whether or not we are dealing with a normal or an abnormal one. Clinical pelvimetry includes the well known external measurements: measurement of the outlet; estimate of the shape of the pelvic cavity and the question as to whether the walls are straight or curved, as Dr. Ané has brought out; the estimate of the ischial spines, which is extremely important, whether or not they are prominent and whether or not to expect trouble; and the diagonal congenital, if it can be reached. Some of us with short fingers can not reach the diagonal congenital in a normal pelvis.

Another thing to be considered from the clinical point of view in pelvimetry is whether or not this patient has a head well down in the pelvis. As we know it does settle down in the average primigravida a few days before the onset of labor. If it is not well down we look for possible trouble, particularly if measurements indicate some contraction. If the head is well down and we feel that the ischial spines are not unduly prominent then we can feel reasonably certain that that baby is going to come through. In dealing with a multigravida of course we have an index by considering the patient's obstetrical history, in which case it is extremely important to know something of the weights of the previous babies. We should not forget that many multiparas have a habit of having larger babies as time goes on. You may deliver one or two small or fair size babies through the pelvis and with the third or fourth baby may get in trouble because the baby is considerably larger. When we get a patient who shows potential trouble in the pelvis from clinical observation, a multigravida with history of previous trouble, or feel from examination that the baby is larger than previous babies, then we are right in resorting to x-ray pelvimetry. We might say, theoretically every patient should have x-ray pelvimetry but frankly it is not too important if we are careful in clinical judgment of pelvis and comparison of baby to the pelvis. It is perfectly obvious that the size of the baby has a great deal to do with it; a small baby will go through a small pelvis, a larger baby will not go through the same pelvis.

That brings out a point that Dr. Ané did not stress very much because he was talking primarily of the pelvis—that is the estimation of the size of the fetal head which roentgenologists always attempt to make for us as well as the estimation of size of the pelvis at various diameters. That is extremely important and it is not always easy to do as brought out because the baby does not have the habit of holding the head still long enough. You can generally catch it pretty well though the rule worked out by experience is if at the inlet the size of the fetal head is calculated, by x-ray, to be fifty cm. or more than the volume of the inlet you may be headed for trouble. At the level of the ischial spine the upper limit of safety is put to 200 cm. of discrepancy. If the head is 200 cm. more than the volume at the ischial spine the baby may get through by work of the mother and considerable work on the part of the obstetrician, but there may be damage. I like to go no higher than 75 or 80 cm. Over that I prefer section.

It is extremely hard to evaluate these things and the roentgenologist is of great importance but his clinical judgment is not final. We find that we do sections on these patients sometimes without a true trial of labor. That trial comes into play particularly in the contraction at the pelvic inlet. If the rest of the pelvis is all right we can attempt to try a little labor there to see if the baby can get through. If there is a normal inlet but a contracted midplane you may get into serious trouble. That is the region which gives most difficulty and where we will do elective sections sometimes without trial of labor. We may do a section unnecessarily but most of us prefer section even if unnecessary in order to guarantee a healthy baby with no damage to the mother.

We are all afraid of these flat sacrums because they cut down the available space for the fetal head. The lateral view is of great importance. The question of whether the baby's head can get by that sacrum is what worries us.

I was interested in Dr. Ané's statement that the clinical measurements in one series showed 80 per cent normal and 15 per cent contracted and x-ray on the same cases 70 per cent normal and 30 per cent contracted, showing the fallibility of the clinical measurements; valuable but not by any means absolute. I was also interested in noting in the series less than 50 per cent of the patients presented a true gynecoid pelvis; and the smallest per cent was in the platypelloid group.

We obtain great help from roentgen pelvimetry but we have to interpret the reports in the light of the clinical picture and together the two will give us a pretty fair idea as to how to proceed. Neither one will be absolute. The best the roentgenologist can do is to give measurements and figures and leave it up to us to decide. I like to study the films myself in addition to the figures. It is a great advantage to have a viewbox and look over the plate and compare with figures and clinical measurements and compare with the estimate you have made on examination abdominally and vaginally, as to what to expect, and make a pretty fair decision before the patient goes into labor.

Now, speaking entirely away from the subject—we find x-ray of considerable value in considering the position of the baby, not whether posterior or anterior but whether the head is well flexed or not. This is of great value in breech presentations; whether frank or full and where the feet and arms are, all of which is of value in helping to determine how to manage that particular patient. We fall back on the roentgenologists quite a bit and find them a great and indispensable aid but we still must insist that the clinical judgment and careful clinical study of the patient is of paramount importance.

Dr. L. A. Fortier (New Orleans): My experience has been altogether with the use of the Ball method in roentgen pelvimetry. We have found it satisfactory for our work and it seems to satisfy the men who have sent us the cases to study. This requires two views: The AP and lateral and the study is made comparative between the pelvic measurements and the fetal skull. We, who do x-ray work, know that the fetal head may shift in position but this does not always happen and many times we can get a good idea about the size of the fetal head. The allowance of 200 c.c. greater volume of the skull in comparison with the volume of the smallest diameter of the pelvis as suggested by the originators of this method works well in our hands.

The study of the pelvis and of the fetal head gives much information as to the abnormalities of the fetus, hydrocephalus, anencephalus, and so on. I recently had a patient who showed osteogenesis imperfecta which was unrecognized until the baby was born. In this instance the fetal spine could be seen *in utero*.

Dr. King is quite correct in saying that you must use clinical judgment. That goes for everything in the practice of medicine and surgery. Nobody should rely on one form of examination alone and it takes good team work to get the job done.

Dr. J. N. Ané (in closing): I wish to thank Dr. King and Dr. Fortier for their remarks. Dr. King brought out the points regarding the combination of obstetrical judgment, clinical examination and x-ray pelvimetry. The roentgenologist should not be expected to prognosticate the course of labor. The question of whether the baby can be born normally can not be settled by x-ray alone.

COMPLICATIONS OF OBESITY

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It will be my purpose in this paper to discuss the extremely prevalent condition of obesity and to emphasize the importance of it to the practitioner of general medicine, not only as a cosmetic curse to humanity, but as a killer and definite threat to longevity. This problem is not one set aside for the internist or even endocrinologist as most "fattys" would have you think, but rather a simple and commonplace one which is the result of an increased supply of and decreased demand on bodily energies.

The importance of the practitioner's knowledge of the seriousness of obesity is further made evident by the fact that it is so easily preventable and curable, such a procedure being relatively simple, practically standard, without untoward effects, and most often successful. The apparent early innocence of obesity lulls most physicians into a false sense of its benignity and creates in them an attitude of indifference towards this protean malignancy.

There are, of course, many different types of obesity ranging from the complex endocrinopathies to simple overeating and/or sedentary living. All of these, however, have in common one point which is obligatory for the storage of fat—that is, too much fuel for too little fire. Many combinations are, of course, possible, as for example: (1) Taking what the usual run of people consume, as far as calories are concerned, but taking less exercise and fewer mental excursions and therefore that particular person will burn basal metabolic calories, only a few others, and the rest, whether acquired from protein, fat, or carbohydrates will be stored as neutral fat in the usual reservoirs. (2) Taking the normal amount of exercise but eating in excess of basal caloric needs and the amount required for maintenance under those conditions. This person also will store fat in the same manner. (3) Taking the average amount of food and exercise for height, weight, sex, and occupation, but just not burning as much of those calories as an average person would. The basal metabolic rate is probably at fault here and "gland trouble" could legitimately be blamed, but, however, merely as the predisposing cause since that particular individual is taking in more calories than he actually requires and hyperalimentation then is still the precipitating cause. (4) Taking average amounts of food and exercise but having some endocrine, systemic, or any one of several other obscure disorders which predispose to fat deposition usually in aberrant or at least unusual sites. In this latter condition again though, the prime evil is still too much food for individual needs.

By way of simplifying the above four classes it appears logical to say that obesity results from (a) exogenous and (b) endogenous causes. The former represents too much food for the oxidative processes and the latter represetns too little in the way of oxidative processes for the food.

Since the purpose of this paper is to discuss the complications of obesity, I shall only touch on those conditions in which obesity is simply a manifestation of dysfunction or disease of some specific organ or system. (1) Gonadal insufficiency, whether due to atrophy, excision, or infection, as a cause for undue fatness is best exemplified by eunuchs and women past the menopause. This as the only cause would be hard to prove because of the close interrelationship between the gonads and the thyroid. (2) Hypothyroidism may be a cause due either to fat accumulation or edema (myxedema) or both. (3) Hypopituitarism is a classical example of a peculiar type of fatness, dystrophia adiposogenitalis, or Fröhlich's syndrome being the best known. This is associated with a lesion of the anterior lobe plus the posterior lobe or hypothalamus. Cushing's syndrome, pituitary basophilism, is also recognized. (4) Dercum's disease, adiposis dolorosa, has several etiologic possibilities, alcoholism and congenital syphilis being the older ideas and hormonal influence (pituitary vs. thyroid) being the newer. (5) Laurence-Biedle-Moon syndrome[3] was formerly thought due to pituitary deficiency but is now considered part of a hypothalamic disorder. It is manifested by obesity, sexual infantilism, retinitis pigmentosa, polydactylism, mental deficiency, and a familial tendency.

THE PRICE THAT IS PAID BY THE OBESE

1. *Cardiovascular System:* If fat were merely deposited peripherally and caused no greater load on the body than its increased weight, that alone would necessitate additional muscular exertion to carry it around. Besides the added burden of actual weight there is also the burden of additional blood supply to the fat depots. It has been calculated[12] that five-sixths of a mile of blood vessels are needed to supply each pound of fat and by simple arithmetic one can see that for thirty pounds of fat one would need twenty-five miles of extra vessels plus additional work by the heart which was not built for such an insult. This would of course, place a greater strain on the heart and circulatory system even

if they *per se* were not directly affected. Such is not the case, however, since this system is one of the most vulnerable to the onslaught of avoirdupois.

In regard to the heart itself there may at first be many symptoms related to cardiac weakness when in reality these are caused merely by increased weight, pericardial fat, and respiratory restriction due to upward pressure on the diaphragm by a fat-laden peritoneal cavity or liver or both. The longitudinal axis of the heart is shifted upward to the left and the apex beat moves out to the anterior axillary line without any actual change in heart size. The left diaphragm is pushed up farther than the right, forcing the heart toward the right and presenting a picture similar to right sided enlargement as well. Due to the thick chest wall and heavy breasts in females the percussion note also may cause a normal heart to appear very much enlarged. The deposition of fat in and around the recesses of the pericardium too may indicate enlargement or alteration of the cardiohepatic angle. If there is an associated dilatation of the heart besides the diffusion of dullness, an inherent weakness is probably present and compensatory changes will be few. Dilatation in a normal heart could be compensated for by greater filling but this does not follow in one whose reserve strength and functional capacity are diminished.

Even the evaluation of murmurs loses some of its significance in the corpulent individual because of the altered course of the aorta. The diaphragm pushes the initial portion to the right and the transverse portion to the left. This twist may cause a systolic murmur and an accentuated A_2 could be caused by its greater proximity to the chest wall. A correct evaluation then of all pertinent clinical data could be made only with the aid and corroboration of accurate roentgenologic studies along with the pertinent physical signs and symptoms.

Another phase of the vascular response to obesity is its effect on blood pressure and it is well known to most clinicians that hypertension is often relieved in the obese by a reducing regime. It also has been shown in animal experimentation[20] that both normal dogs and artificially produced hypertensive dogs when made to gain large amounts of weight would show a marked elevation of blood pressure, chiefly systolic, and just as marked a decrease when allowed to lose the extra poundage. The true relationship of human hypertension to obesity is still unsettled, but it does seem very likely that a simple increase in peripheral resistance may be the main factor. Musser[14] also has shown a close relationship between obesity and hypertension but has added diabetes mellitus to his syndrome. In a series of thirty cases he has demonstrated in obese hypertensive women, sugar tolerance curves which approach those of a diabetic patient. Hypertension of course, is not an infrequent finding in diabetes since arteriosclerosis is so frequently encountered concomitantly, but a greater percentage of the obese diabetics have a hypertension and also to a more marked degree. To sum up these effects Joslin refers to diabetes as "the fat man's folly" and to obesity as "the open door to diabetes."

2. *Heat Dissipation:* This often proves to be a most annoying and uncomfortable complication of obesity even though it is not a particularly dangerous one. With the increased deposition of fat in the body wall the normal physiologic mechanism of heat loss through conduction and radiation is interfered with and reduced by the insulating effect of the fatty superficial fascia. Sweating in this situation then is increased.

3. *Surgery:* In obesity of any etiology there is an impairment of practically all organic functions and in consequence a lowered resistance of the organism as a whole. It is therefore the duty of the surgeon in all non-emergency cases to evaluate carefully this problem of obesity preoperatively and if possible to correct it.

As has been stated obesity will prematurely affect the cardiovascular system and there is a definite predisposition to thromboses, emboli, and cerebral hemorrhage.[19]

It is easy to see how the upward pressure on the diaphragm might embarrass respiration through a decreased vital capacity and lead to any of the pulmonary postoperative complications of which atelectasis following upper respiratory infection is the most common.

The liver function may be altered and cholelithiasis and hepatomegaly with fatty invasion are often seen. The metabolism of all foods, carbohydrate, protein, and fat itself are affected as well as the excretory and antitoxic functions. Even relatively minor surgery may in some unknown way provoke a state of hepatic insufficiency if any preoperative impairment was present.

Constipation, normally a postoperative problem, comes into more prominence and should be considered even more carefully in the frequently constipated obese.

Renal function impairment is sometimes very distressing and extra effort should be made in the obese to prevent oliguria, albuminuria, and hyperazotemia.

The actual mechanics of surgery too are affected in the obese and many procedures are made difficult if not nearly impossible to do thoroughly and efficiently. To cite an example, one author[6] has modified his technic for the surgical treatment of cancer of the body of the uterus in the obese. He has found that in total hysterectomy on these people it is almost impossible to prevent the pads of extraperitoneal fat of the abdominal wall from rolling over the vagina after it is cut away with contamination and peritonitis possibly as very serious sequellae. This writer prefers to do a subtotal hysterectomy, bilateral salpingo-oophorectomy, and cauterization of the mucosa of the remaining cervical stump. The usual method of closure and reperitonealization is done.

4. *Gallstones:* An observation probably obvious to most medical men is the increased incidence of gallstones in the obese, Bauman[3] having set a figure of 88 per cent of gallstones occurring in obese individuals. As far as sex distribution is concerned, women are more frequently affected than men. From 5 to 10 per cent of the total population is said[5] to show cholelithiasis at autopsy while 20 per cent of women who have borne children show it. Anything causing hypercholesterolemia will not always predispose, since it has been shown that the incidence in myxedema, nephrosis, and other conditions, is no greater than is normal although the cholesterol level is elevated, but in many conditions in which cholelithiasis is present, hypercholesterolemia has been given the major part of the blame. Such is true in pregnancy, obesity, and in people with sedentary habits.

5. *Diabetes:* (a) Mellitus—This has already been discussed to some extent under the cardiovascular system and there was some hint that all diabetes mellitus was not due entirely to a pancreatic deficiency. The glycemic state tended to vary with the patient's weight in Musser's 30 cases and this was corroborated by another group[15] who treated 370 cases of diabetes mellitus between the ages of 30 and 65, two-thirds of whom were overweight when the treatment was begun. In general these patients had been overweight for years, hypertension was present in 40 per cent, and cataracts were not uncommon. A representative section of this group were given a test on their ability to oxidize dextrose and then placed on a reducing diet. These tests were repeated during their periods of treatment (solely weight reduction) and again after completion. Only those willing to conform strictly to the regime were accepted for study, their number being 35. The results show that the disturbance in dextrose metabolism is intimately associated with the degree of obesity. More than 90 per cent became aglycosuric and did not spill any sugar in their urine when fed the test meal. They also exhibited normal dextrose tolerance curves. As a conclusion these authors suggest that the glycosuria and abnormal response to test meals of glucose are due to excessive deposition of fat in the liver with the result that there is an impairment of its ability to store glycogen properly.

(b) Insipidus—Although no definite relationship of this condition to obesity is completely accepted, a case[10] was reported in which a patient on developing the polyuria and polydipsia first lost a few pounds (for two years) and then rapidly gained almost to double her normal weight in the succeeding six years.

6. *Polypnea:* Besides the respiratory embarrassment caused by actual mechanical lowering of the vital capacity there is also another cause for polypnea in the obese and asthenic. It was found[1] that many individuals, especially weak and obese ones required a greater amount of respiratory interchange in order to eliminate the necessary carbon dioxide. Its level normally in expired air is about 3.7 to 4.5 per cent and this varied with the physical condition of the subject, going up in athletes and down in asthenics. With this change then one can easily see how an increased number of respirations or at least an increased depth of respiration would be a physiological necessity.

7. *Parturition and Puerperium:* In pregnancy an increased weight may be due to (a) increased fat prior to pregnancy; (b) increased retention of water and salt; (c) unphysiologic weight increase during pregnancy (greater than 22 pounds). It has been generally accepted in the literature that there is a higher incidence of practically all complications of pregnancy in the obese,[21] prolonged labor, puerperal infection, thrombosis, embolism, edema, albuminuria, hypertension, kidney involvement, eclampsia, and abnormal position of the fetus. One point of practical importance is the diagnosis of pregnancy, which in extreme cases of obesity may prove most perplexing without the aid of animal tests. Many of these women have irregular menstruation to begin with and palpation and auscultation may not lend much help.

Because of the added fat deposits in the pelvis mechanical dystocia may present a problem. All pregnant women then should be admitted to a hospital at the onset of labor in order that their proper management be allowed should any unforeseen situation arise.

8. *Gonalgia:* This condition is frequently seen in women past 40 and most commonly in those who are obese and in the climacteric (50 per cent of the latter group[4]). It is known by several names: Menge's arthritis, Munk's dry arthritis, climacteric arthropathy and so on. The first symptom often is pain on the internal surface of the patella noticed on climbing stairs and with slight efforts. Later it may even be noticed at rest and there may be pain on pressure. Finally one observes an enlargement of the knee without effusion and a limitation of motion. Radiography shows marginal osteophytes of the tibia, femur, and patella and these usually undergo an early decalcification.

Salicylates usually will not relieve the condition but good results are frequently obtained simply with a light bandage from the tips of the toes to the knee.

9. *Reflex Gastrointestinal Hypermotility:* It is usually thought that constipation is the chief gastrointestinal complaint of the aged and the obese, but, however, in the latter there is a considerable number suffering from a diarrhea of several normal movements per day. In the typical case of which I am speaking, clinical examination failed to reveal any abnormality other than the obesity. By way of an explanation, a German worker[16] observed gastric hyperperistalsis associated with deep breathing, due he hypothesized, to the pressure of the diaphragm from above. In obesity now there is an increased pressure from all sides and the same rapid emptying time is noted from the stomach practically to the rectum.

10. *Amenorrhea:* In reality this is not one of the sequels of obesity but rather a concomitant finding sometimes seen in certain types, especially the endogenous (ovarian endocrinopathies). The causes of this type of amenorrhea are: (a) ovarian insufficiency with anomalies in tempo of the menstrual cycle; (b) ovarian insufficiency manifesting itself chiefly in a hypoplasia of the uterus itself.

CONCLUSION

No better proof of the malignancy of obesity is offered than by actual life insurance statistics which prove conclusively that longevity and obesity do not go hand in hand for "as we lengthen the waist-line we shorten the life-line."[12] In many causes of death the rate is several times higher in the obese and only one disease to my knowledge is favorably affected, as far as mortality rate is concerned, by obesity, and that is tuberculosis.

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RUPTURE OF THE DEEP EPIGASTRIC ARTERY

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Hematoma occurring within the rectus sheath is seen so infrequently that invariably it is mistaken for more frequent abdominal pathology. These diagnoses are most usually twisted ovarian cyst, appendicitis with abscess formation, strangulated hernia or acute abdominal emergencies. A review of 21 cases shows that only two cases were correctly diagnosed prior to operation. Hemorrhage within the rectus sheath is not as rare as it has formerly been considered. Nevertheless the error in diagnosis has been so consistent that a review of the subject seems justifiable.[1-4]

The chief cause for failing to recognize this surgical entity is due to a lack of appreciation of the mechanics whereby it is brought about. The hemorrhage results from a rupture either of the superior or inferior deep epigastric artery or the accompanying veins or the rectus muscle or all these together. The variation in the severity of the symptoms depends upon which combination of these occurs. In the last analysis it may be safely stated that the hematoma occurs as a result of trauma of some sort, although in the cases reported it must be admitted that the precipitating injury was very minor and that other factors contributed to the rupturing of the rectus muscle.

An excellent description of the anatomy of the contents of the rectus sheath was found in an article by Cullen and Brodel,[5] to which liberal reference has been made. The arterial supply to the rectus muscle is peculiar in several ways. The beginning of the inferior and superior epigastric arteries are fixed points which do not give way on tension. They lie dorsally to the muscle and their branches enter at almost right angles with a festoon effect. As the abdominal wall varies according to sex, age, nutrition, posture and muscularity, so does the position of the epigastric artery vary. The majority of cases of hematoma occur in that position of the rectus sheath below the umbilicus, and of these the majority are found on the right side. This frequency of occurrence may be due to the fact that torsion, flexion or extension of the rectus muscle is invariably greater on that side which the individual uses most. The accumulation of blood below the umbilicus may so increase in size, pushing the peritoneum inward, that it easily suggests an intra-abdominal lesion.

Many of the contributing factors which initiated the hemorrhage in the cases reviewed were coughing, sneezing, exercise of varying intensity whether continuous or sudden, pregnancy and infection.[6-9]

The symptoms of hematoma depend upon the degree of trauma and the amount and rapidity of bleeding. A large group of cases go undiagnosed as a rule because of the relatively minor nature of the pain and the speed with which they recover. These individuals usually lead sedentary lives and only occasionally take strenuous exercises or do any heavy work. Frequently after 24 hours they complain of a soreness on one or the other side of the abdomen. Examination may reveal nothing more than a slight rigidity and the cause of the pain, while correctly attributed to the unaccustomed exertion, is not accurately diagnosed. Usually the pain goes by the name of muscle strain and within a few days it subsides and no diagnosis is made.

The cases recorded in the literature are divided between those showing acute and rapid symptoms and those that are delayed. The patient with the acute type develops sharp localizing pain in the abdominal wall on either the right or left side. There may be nausea or vomiting. The patient may even develop a rapid pulse and appear in shock; the temperature may be somewhat elevated. The pulse is rapid but the blood pressure is seldom affected unless shock is present. The findings on examination depend upon whether the bleeding is in the lower third or in the upper two-thirds of the rectus sheath because the absence of the posterior sheath in the lower third permits greater hemorrhage with peritoneal irritation. Hence these patients seem to be gravely ill. When hemorrhage occurs in the upper two-thirds of the rectus sheath it is most frequently confused with acute cholecystitis.[10-15]

Most of the delayed cases reported occurred in women who were either pregnant or were old and obese. The trauma in these cases was usually a coughing or sneezing attack. This merely indicates that the epigastric vessel which had already been so severely stretched either by the pregnancy or the obesity that the extra stretching of a violent cough or sneeze, was enough to rupture it. These patients developed a slowly increasing mass with slightly elevated temperature. In many instances these were diagnosed as twisted ovarian cysts or abdominal abscesses of varying causes. Leukocytosis was usually present. Several patients showed a slightly icteric tint. The most important single factor in correctly diagnosing this condition is to know and consider its possibility in a certain given environment.

The treatment is necessarily surgical. The rectus sheath must be opened, the clot removed and the bleeding vessel ligated. In those cases with delayed symptoms the blood has become so intimately interspersed in the muscle fibers that it cannot be removed. The abdomen should not be opened and the wound should be closed without drainage. In the recorded cases most were opened and explored and coexistent abdominal pathology which might be present, was corrected.

CASE REPORT

Mrs. M. S. K., a white female aged 63, weighing 160 pounds, complained of pain in the right lower abdomen which began three days prior. The onset was sudden but not severe. She was worried because the pain persisted and a lump was developing in the right lower quadrant. There was no nausea or vomiting. Her bowels had been regular and she had had no fever.

On examination a firm rounded mass about the size of a small orange was palpable to the right side of the lower midline and extending to the umbilicus. It was difficult to delineate the mass because of the obesity. Tenderness was not acute and the patient moved about fairly freely in bed. Pelvic examination was likewise difficult because of the senile changes in the vagina and the abdominal obesity making a bi-manual palpation impossible. There was no history of direct or indirect trauma obtainable at the time. The diagnosis was confused by the fact that the patient stated she had had repeated attacks of appendicitis. Red blood cells 4,200,000, white blood cells 10,800, polymorphonuclear cells 72 per cent, small lymphocytes 26 per cent, monocytes 2 per cent. The sedimentation rate was normal and the Wassermann was negative.

Under spinal anesthesia a lower right rectus incision was made. Upon exposing the anterior rectus sheath it was found to be discolored and bulging. Incision through the sheath exposed a mass of clotted blood separating the fibers of the rectus muscle and extending from the pubis to one inch above the umbilicus. Upon removing some of the clotted blood a slight oozing was found coming from a lateral branch of the deep epigastric artery. No other source of bleeding was found. As the patient was under spinal anesthesia she was again questioned in regard to trauma and it was learned for the first time that prior to the onset of her illness she attempted to turn the mattress of her bed by herself. It was then that she felt a sharp pain in the right lower abdomen but thought nothing of it. The peritoneum was opened and an appendix with a fecolith was removed. The abdomen was closed without drainage. The patient made an uneventful recovery.

DISCUSSION

The interesting features in this case were the apparent insignificance the patient placed upon the trauma as the cause of her trouble, the slowness in the development of the mass and the history of repeated attacks of appendicitis.

Spontaneous rupture of the deep epigastric vessel producing hematoma of the abdominal wall presents a fairly typical picture. A review of the subject has been presented because of the frequent errors in diagnosis. The ensemble of a sudden onset of pain followed by swelling either to the right or left of the midline, with symptoms of peritoneal irritation usually in pregnant or old and obese women, should lead to a correct diagnosis prior to operation. Operative interference is justifiable in all such cases except the very minor type.

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STUDY OF CHILD HEALTH SERVICES

Post-war planning for child care has received much attention during recent years from many organized groups and individuals throughout the country culminating in legislation now before Congress. The American Academy of Pediatrics, realizing that the responsibility for such planning rests primarily in the hands of physicians themselves, has launched the Study of Child Health Services in order first, to gather necessary facts from which well-founded plans can be evolved, and second, to determine the extent and quality of services now available. Thus the physicians, unquestionably the ones who know what constitutes good care and who for the most part provide that care, have accepted the challenge to develop constructive plans for medical service to children.

The Study of Child Health Services was first inaugurated by the Academy of Pediatrics at its meeting in St. Louis in November, 1944, and is developing into the most important and extensive project which the Academy has undertaken. The organization work of the study has been completely set up and a test survey was made in North Carolina in 1945. This test survey is proving to be very successful and it was decided that it should serve as a guide for the study on the national level.

The project is unique in that it is a study by the pediatricians themselves of the medical care received by and available to children, of existing facilities for medical care and the education and training of physicians giving the care. It is not a study by a lay group, a foundation or a department of the government. It must be emphasized that the study is in no way connected with the many plans which have been proposed for medical care, nor related to any of the Federal proposals for medical care, such as the Pepper of Wagner-Murray-Dingell bills, which are the center of so much present-day controversy. It is the viewpoint of the American Academy of Pediatrics that the important thing is to find out on a nation-wide basis what medical care American children receive and what facilities for medical care are available. Only on such a foundation can sound and intelligent plans for the future be built.

One of the fundamental purposes of the present study is to stimulate local groups to discover for themselves the needs of their own community and the facilities to meet these needs. Essentially, this seems the collection on a vast scale of adequate and reliable data. Although the Academy of Pediatrics is committed to carry out the task, the success of this tremendous undertaking is the responsibility of individual physicians everywhere.

To obtain a complete picture of the existing child health facilities, data will be collected by means of questionnaires on every important aspect of pediatric and medical service. Four major categories will be studied. First, hospital facilities; second, community health services, official and voluntary; third, distribution, qualifications, and activities of professional personnel; and fourth, pediatric education.

The administration and conduct of the study in each state will be under the direction of the state chairman of the American Academy of Pediatrics, who, with the help of an executive secretary, will organize the program and correlate all the many activities involved. Dr. Clarence H. Webb of Shreveport has been appointed state chairman for Louisiana and Dr. Orville C. Thomas of Shreveport, executive secretary.

At a meeting of the pediatricians of Louisiana in New Orleans on April 12, 1946, Dr. Clarence Webb presented the entire program as contemplated for the state of Louisiana. After adequate discussion, the pediatricians voted unanimously to conduct the study in this state.

O. C. THOMAS, M. D.

SURGERY OF CONGENITAL CARDIOVASCULAR DEFECTS

Recent advances in the surgical treatment of congenital cardiovascular defects has stimulated the interest of the pediatrician, surgeon, cardiologst, internist and general practitioner. Until very recently most physicians were entirely satisfied to make a diagnosis of congenital heart disease without any attempt to classify its character anatomically, feeling that such interest was only academic. This approach to the problem of congenital heart disease is no longer justifiable, because certain types can now be successfully treated surgically and the possibility exists that the number may be increased in the future. It is therefore most important to determine, if possible, the character of the congenital defect, or defects, and to do everything possible to improve and protect the general condition of the individual until such time as surgery can be done or the child is old enough for an exact diagnosis to be made.

In the Harvey Lecture for 1945, Alfred Blalock* discusses the advances in surgical therapy in patent ductus arteriosus, coarctation of the aorta, and tetralogy of Fallot. As he states, the advances are definitely recent as shown by the statement of Paul White in 1937 that "there is no curative treatment, surgical or medical, for congenital cardiac defects." The work of Abbott, Taussig, Gross, Burwell and others stimulated interest in the field. Although previous work had been described by Munro and Strieder, Gross was the first to perform a successful closure of an open ductus arteriosus in 1938. The operation has been performed successfully many times since, and led the way to surgery in other types of congenital lesions. Experimental work done by Blalock and Park, and work by Crafoord in 1944 and Gross in 1945 opened the way for possible surgical treatment of coarctation of the aorta. Finally Blalock worked out a technic for surgical therapy in pulmonary stenosis and pulmonary atresia, most commonly seen in association with other defects comprising the tetralogy of Fallot. This consists in an anastomosis of the subclavian, carotid or innominate artery with the right or left pulmonary artery. Up to November 1, 1945, there had been 57 operations on 55 patients for this condition at Johns Hopkins. The first two patients have died since operation. The third patient is unchanged. Of the remaining 52 patients, 40 are improved, two are unchanged, and 10 have died.

The improvement in the 40 cases has been in most cases a change from almost complete invalidism to apparent normality.

BENADRYL

And now another new drug, this time one to be used in the symptomatic relief of urticaria, hay fever and vasomotor rhinitis.

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*Blalock, Alfred: Physiopathology and surgical treatment of congenital cardiovascular defects, Bull. N. Y. Acad. Med., 22:57, 1946.

Benadryl, a new anti-histamine substance, promises to relieve the edema produced by the histamine or histamine-like substances in these conditions. It decreases the cutaneous vasodilation and has an antispasmodic effect on smooth muscle. Chemically the drug is beta dimethylaminoethyl benzhydrl ether hydrochloride.

In a recent symposium by members of the Mayo Clinic Staff,* the results in the treatment of urticaria, hay fever and asthma, vasomotor rhinitis and serum reactions are enumerated and discussed. The authors found that the symptoms of urticaria were relieved in most cases, often as soon as one hour after the first dose, and in a few cases the attack of urticaria was terminated. Relief was also obtained in patients with angioneurotic edema. The dosage varied from 50 to 100 mg. daily by mouth.

In hay fever patients almost complete relief was often obtained after two or three doses of 50 mg. of benadryl by mouth daily. After the first dose symptoms were relieved within one hour and the effect lasted from five to eight hours. In asthma, the drug was less effective, only a few patients getting partial relief.

In children the symptoms of these disturbances and serum reactions were relieved. Approximately two mg. of benadryl daily per pound of body weight seemed to be adequate.

The drug may be given intravenously, intramuscularly or orally. It is moderately irritating when given intramuscularly. Side effects are greater with oral than parenteral administration, and include drowsiness, dizziness, dry mouth and nervousness. All are transient and mild. Nausea and vomiting may require discontinuance of therapy. Since the drug decreases gastric acidity in some cases, it may offer a new approach to the control of gastric acidity. Drowsiness, not undesirable at bedtime, may be combatted during the day with caffeine or benzedrine, and nervousness is not marked if the daily dosage is kept small.

The new drug, now available, opens vistas of relief for those sufferers of these annoying conditions.

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*Carryer, H. M., Farber, E. M., Horton, B. T., et al., Proc. Staff Meet., Mayo Clin., 20:417, 1945.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

FURTHER DATA ON THE WAGNER-MURRAY-DINGELL BILLS

All members of the State Society should read the following brief which was prepared by a special committee from the Executive Committee approved by the Executive Committee and presented by a special delegation including Drs. Val Fuchs, M. D. Hargrove, Rhett McMahon, P. T. Talbot and E. L. Zander to the Senate Committee on Education and Labor in Washington, D. C., on April 17. This expresses the views of our organization concerning this legislation and all of our doctors should be interested and active in attempting to have these bills defeated.

VIEWS OF THE LOUISIANA STATE MEDICAL SOCIETY IN REFERENCE TO SENATE BILL 1606 AND HOUSE BILL 4730

We realize that there is some attempt made by these bills to expand and provide for needed medical services; a feature which is universally approved by the entire medical profession and something which we have been constantly trying to perfect for many years. The best medical minds in the world have been and are busy working on a continuation of this plan. Even through the most destructive war we have ever had and with the small number of men remaining at home, there has been no let-up in this activity during this period of time. The revolutionary plans as provided for in the bills, which should be regarded as socialization of medicine, are typical of postwar periods and such plans after being tried usually revert to the methods of the past.

Following is a review of S. 1606, for your information:

The bill is basically in error in presuming that with the increase in medical care there will be a reduction in the incidence of disability and illness in childhood, because, for such a reduction all students of health realize the basic needs are improvement of environments, especially of rural families, essential clothing, food, personal and community hygiene, housing, sanitation and raising the standards of literacy.

The bills will not supply more adequate medical care as claimed by the proponents, which is the motivating influence claimed for such legislation. The results, to the contrary, will produce inferior and politicalized medicine and thus delude the American people in this erroneous impression.

The implications in these bills are un-American and alien in ideologies, typical of totalitarianism and communism which were the domniating rule in Germany, Italy and Russia. This is socialized medicine more sweeping and even more far-reaching than any ever attempted in any country, with the possible exception of Russia.

It should be conceded by well supported data that the *medical profession* of this great country, on past performance and their potentialities, would be the right and proper group to turn to and depend upon for any remedial changes, if needed, in order to render adequate medical care, therapeutic medicine and research.

Any form of compulsion, implied or stated, is contrary to our democratic concepts and robs our country of the stability and strength so strongly manifested by free enterprise, so elemental to our social economy. This freedom of medical opportunities has contributed more to the strength, health and happiness of this great nation than any other factor, which has resulted in making our nation the greatest and strongest in the world.

The United States Public Health Service should never be restricted or hampered in the functions assigned to them of preventive medicine by added burdens of therapeutic medicine for which they are not prepared by practice to perform, comparable to our regular physicians. Their fields of preventive medicine offer many opportunities which have been so ignominiously neglected to their discredit and reaction on the health of the nation.

In regard to Title I, Section A, we would refer to our statement above.

Concerning Title I, Section B, we object to the Federal government encroaching on the practice of medicine in any of its branches. We feel that the care of pregnancy and the care of infants and crippled children are specialized branches of medicine and should be left to the medical profession to provide for medical care in the same manner as they do for all other diseases of the human body. In regard to treatment of crippled children, we feel that this field of medicine is very thoroughly taken care of in our state by the organized profession and allied groups and that the provisions for taking care of these children are adequately provided for on a state basis.

We do not understand why provisions for the above services should be included in this bill as all are provided for now by the Federal government. If larger appropriations are needed for the conduct and expansion of any of this work there is no doubt that Congress now has the power to grant same.

In reference to Title I, Section C, "Grants to States for Care of Needy Persons" we approve grants-in-aid to supplement funds of state and local agencies to provide full medical care and hospitalization for the needy; same should be provided only to persons whom the payment for such services would be a hardship, and same should be done with state control and local administrative authority as now being done in our state; supplying medical care and hospitalization both free of charge.

We object to Title II in its entirety for the following reasons:

The Surgeon General would be authorized and directed to arrange for the availability of benefits; he would have full control of the expenditure of unestimated billions of dollars without outside interference, setting up a one-man dictatorship.

The patient would not have the free choice of a physician, but would have a choice only of a physician who is a member of the panel; i.e., a physician who has agreed to work under the plan and on condition that the Surgeon General has not so limited that physician's practice as to preclude the acceptance of more patients. Should the patient's family physician not be a member of the panel said individual would be required to pay his family physician's fee for medical service, after having already had a tax for medical services deducted from his earnings. The fundamental rights and democratic privileges of freedom, to select one's own physician, and the great comfort enjoyed in the maintenance of the patient-physician relationship is destroyed by these bills.

In every instance where the government has interfered in the distribution in the quality of medical care, it has destroyed the initiative and the incentives of the individual doctor and it has robbed the medical profession of its independence and its self-respect.

The states would be forced to accept the provisions of the bills whether they approved this legislation or not; this would be unconstitutional because it does away with state rights. (Following the close of the Civil War the medical profession had incorporated in the constitution of Louisiana provisions whereby all state activities carried on in charitable institutions, grants to hospitals and individuals should be a state responsibility.)

The present expansion of voluntary prepayment medical insurance, both from a national and state viewpoint, the great increase in industrial medicine and the enlargement of contracts for medical and surgical service through commercial insurance groups, all at a lower cost than will be required under these bills, should preclude the necessity for governmental supervision of medical care. The American Medical Association, which is in a better position to know the medical needs of the country, has recently adopted a constructive program for the improvement of medical care. (Refer to the attached clipping from the March 9, 1946, Journal of the A.M.A.) The objectionable features contained in the bills introduced by Messrs. Wagner, Murray and Dingell have been entirely eliminated in the national program of the American Medical Association, sponsored by physicians on a voluntary prepayment basis substituting a process of evolution rather than revolution.

We are in favor of seeing that everyone is provided with proper medical care but are opposed to further taxation on an already overburdened public and particularly to the inequitable payment of such taxation. The low income individual, who is now eligible for medical services free of charge in city and state institutions in Louisiana would be compelled to pay for such services.

Unemployed individuals over 65 years of age would not be eligible for participation, leaving them to the mercy of the public and their friends even though they may have participated in the plan for a number of years.

It would require at least 300,000 bureaucrats to administer this program.

Federal funds would be provided to subsidize medical education and medical research. We are opposed to this provision of the bills because the Surgeon General would be authorized and directed to administer grants-in-aid to non-profit institutions and agencies engaging in research or undergraduate or postgraduate professional education, and he would have some $80,000,000 annually at his disposal. Such a program would lower the standards of opportunity in this field and would probably inhibit the dissemination of such results as might accrue to those who are most deeply interested in such discoveries. Most of the great discoveries and improvements in medicine since the foundation of our country have been done by private initiative by our medical schools and by grants and loans from philanthropical sources and associated medical groups, such as pharmaceutical houses, instrument houses, and prosthetic houses, which have aided the medical profession in keeping the high standards of medical practice which it now enjoys. Therefore at the present time the American medical profession stands head and shoulders above the medical profession in any other country in the world. We feel that the American public is better protected than the people in any other country in the world. We feel that the American public has a right to this continued medical service and that it should not be dissipated by such revolutionary measures as proposed in the Wagner-Murray-Dingell bills.

On April 8, Dr. King Rand attended a conference of State and Territorial Health Officers in Washington. At this meeting he took the occasion to express to the officers present the views of the Louisiana State Medical Society concerning these bills.

On March 30, the members of our committee on Rural Medical Service, Dr. Guy R. Jones, chairman, and Drs. J. P. Sanders and M. C. Wiginton, members, attended a national conference on rural medical service in Chicago. A report will be made by this committee at our 1946 meeting and unquestionably recommendations will be made for advancement of this service in our state.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of very month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

DE PAUL SANITARIUM

The regular monthly meeting of the Medical Staff of De Paul Sanitarium was called to order at 8:05 p. m. with Drs. Beach, Thompson, Henry Colomb, Anderson, Friedrichs, Holbrook, Otis, Hite, Willoughby, Connely, Soniat, Hill, Dubos and H. P. Harris in attendance.

The scientific portion of the program commenced with Dr. Holbrook presenting Mrs. L. S., Case No. 4507, that of a white female with dementia praecox admitted two weeks previously, in a highly emotional state, delusional, and hearing voices telling her that God wanted her to commit suicide and bite her tongue off. She so bit and chewed her tongue that profuse hemorrhage followed with complete mutilation, gangrene and sloughing of the outer half. The case was discussed by Drs. Otis, Anderson, and Beach. Next Dr. Hunter P. Harris, Jr., presented Dr. J. L., Case No. 4534, that of a 64-year-old physician who was admitted to De Paul supposedly as a morphine addict with nervous phenomena, unsteady gait, jerky chorea-form movements and signs of dementia. A probable diagnosis of Huntington's chorea was made and the case was discussed by Drs. Anderson, Otis, Connely, Holbrook and Dubos. Finally Dr. Friedrichs discussed the postmortem findings and diagnoses of four recent autopsies, one showing a glioma and the other three medical causes as responsible for death.

The chairman next called for the reading of the minutes of the previous meeting but it was moved and seconded that this be dispensed with. Dr. Otis, as chairman of the Record Committee next read the reports of the various departments all of which showed satisfactory improvement. Sister Anne then rose to thank the Staff for the kindnesses shown the new class of nurses and voiced her appreciation in their behalf. There being no further business the meeting was adjourned at 9:55 p. m., followed by the serving of refreshments.

LOUIS J. DUBOS, M. D.,
Secretary.

TOURO INFIRMARY

The regular meeting of the Medical Staff of Touro Infirmary was held on Wednesday, April 10 at 8 p. m. The following program was presented: A Clinico-pathologic Conference by the Department of Pathology with a clinical discussion by Dr. C. L. Eshleman; Portal Shunt: A Surgical Treatment for Cirrhosis, by Dr. Sam Nadler; Primary Malignancy of the Small Intestine, by Dr. Sam Romano.

TO MEMBERS OF THE NEW ORLEANS HOSPITAL COUNCIL

HOSPITAL COSTS

It is evident to all of us, not only in New Orleans, but throughout the entire country, that the continued rise in hospital costs is forcing us to consider an upward adjustment in hospital rates. The question of how this increase may be best passed on to the patient or what part of it can be absorbed by administrative economies is a challenge to all hospital administrators. Anyone who has devoted time to the study of this subject realizes the possibility of a percentage increase in hospital costs during 1946 much higher than can be passed on to the patient, and our recommendations for rate increases are based on the knowledge that the recommended increase will provide less than 50 per cent of the additional amount needed to meet the anticipated increase. It is the opinion of the committee that if economies cannot be effected to meet the balance of the increased costs, then the matter should again be considered by this council at a later date.

The returns in the tenth Poll of Hospital Opinion as to what hospitals are doing with regards to raising rates, and reported in the February, 1946, edition of Hospital Management Magazine, reveals that 22.4 per cent have recently increased rates, 17.2 per cent plan early increases and 31 per cent are considering increases. The recommended increases range from 5 to 20 per cent, and most replies state that the additional revenue will not permit the hospital to balance its budget. Since August, 1939, hospital supplies have increased 75 per cent according to the McGill Commodity Index. During this same time hospital expenses in New Orleans have increased 62.2 per cent and rates have increased but 45 per cent.

The government's efforts to prevent inflation by price control are steadily weakening and we are faced with increased costs of labor and supplies. In the hospital field salaries and other expense each account for approximately 50 per cent of the total cost of operation, and each must be studied to offset the inflationary trend created by the general wage increases to industrial workers and by the lifting of price control by OPA on many hospital commodities.

SUPPLIES

The committee has tried to be as conservative as possible in estimating the probable increases during 1946. In the four-week period that we have had this problem under review, it has been necessary to increase our estimate and yesterday's paper regarding meat prices also affected our forecast.

Food is the largest item and accounts for 30 per cent of all supplies. The government is no longer using the huge quantities of previous years, and the production goal of 1946 is commensurate with the 1945 level. Unless we have a drought, which some people predict, foodstuffs should be more plentiful, and there should be a substantial increase in agricultural production in Europe during the year which will reduce the necessity for continuing heavy shipments for rehabilitation purposes. We consider the increase in food costs will be lower than any other group, with the exception of *drugs.*

Cotton Goods: These goods have increased at least twice this year and may be increased again in the near future. A 20 to 25 per cent increase may well be considered and protective inventories for at least 90 days are advisable.

Drugs: No basic price change is anticipated during the first half of 1946 in drugs which amount to 10 per cent of all hospital supplies. The productive capacity for drugs was stimulated to an extensive degree due to the pressure of war requirements. The army realized that they had overestimated their needs by about 50 per cent. In a peacetime economy it is necessary to use up this surplus stock and to adjust production schedules down to normal consumption. Production costs may hold steady but the element of competition should prevent any drastic upward trend.

Paper Goods: The prolonged shortage of paper goods is not destined to end abruptly. The output of 1945 will be exceeded by over one million tons during 1946. The price is definitely going higher and inventory protection is advised. Many restrictions have been cancelled and we should again consider the importance of quality when purchasing this commodity.

Fuels: Fuel oil, bituminous coal and gasoline are clouded with uncertainties. The visible supply of liquid fuels continues to climb, as production is holding a relatively high level and consumption is on the decline. Bituminous coal production will increase in the spring as more labor and transportation facilities are made available, and the supply-to-demand ratio for 1946 should improve (barring another strike). Protective seasonable reserves should be maintained, and only a moderate price rise is expected.

Household and Laundry Supplies: The indications are that a rise of at least 15 per cent may be anticipated during the year. The shortage of material is at present strengthening the market. If OPA lifts the price control, an additional 5 per cent increase may be expected.

Surgical Supplies and Equipment: Surgical equipment is scheduled for a considerable increase. During December, 1945, OPA approved Amendment 12 to Supplementary Order 126, lifting price control from hospital equipment items, including x-ray, laboratory, physiothermy, surgical and dental equipment and instruments. These items immediately hit the stratosphere. Advice from several manufacturers and many hospital equipment dealers, indicates increases of 10 to 100 per cent on all hospital equipment items, with an average from 25 to 30 per cent. Supplies are expected to show a 10 to 15 per cent increase. These price increases are so definite that the new catalogues now in preparation will record these changes.

Salaries and Labor: The national trend of labor will inevitably affect our individual institutions, as evidenced in New York and elsewhere, and by he substantial increases recently given to indusrial workers. It has been evident to most hospital dministrators for several years that high wages n hospitals are here to stay. We must expect to ay comparable wages with industry. There are wo ways in which this situation can be met. ither increase income or employ fewer, higher aid, more efficient and better-trained personnel o produce the same amount of service.

Accounting: The discussion of hospital costs vould not be complete without some reference to niform methods of accounting and compiling staistics. These two items are the elements of the ystem, and the advantage of uniformity is known o you all. A hundred and one references could e given on this subject, but we will limit ourelves to one which is available to all of you, and he following being abstracted from an article in odern Hospital, February, 1946, entitled, "Are our Figures Based on Facts," by our good friend, verett Jones, who is now technical advisor to at magazine. The contents of this abstract are asically the same as the procedures that many of s, who entered hospital administration by way of e accounting field, have been preaching for twen-odd years.

"From a study of hospital charges in many parts the country it is evident that rates are not often established on a business-like basis. The American Hospital Association's council on administrative practice, committee on inclusive rates, in its splendid report of May 12, 1945, makes this statement: 'In the absence of exact calculations, the determination of a hospital's rates and charges has always presented one of its more perplexing problems. That little or no consistency is present in the practices of hospitals in this regard becomes immediately apparent when comparisons of hospitals of like size and type are made.'

"We can well start on the thesis: 'Charges should be established with a definite relation to the cost of rendering service.'

"Considering these basic facts, the following would appear to be a sensible method for establishing hospital charges:

"1. Establish the average cost per patient day through the use of the American Hospital Association's standard chart of accounts and bookkeeping procedure. The importance of using this standard procedure by all hospitals cannot be overemphasized. With the average cost per patient day thus established the hospital can successfully defend its figures to the public, to Blue Cross plans, to public welfare officials and to compensation and commercial insurance carriers. And do not forget to include proper depreciation on equipment and fixtures.

"2. Set the lowest established rate for ward patients so that the average billings per patient per day will equal the average cost per patient per day less about 5 per cent.

"The average daily billings for all extra services supplied by the hospital plus the daily ward rate should equal the daily cost. In those states or localities in which welfare department payments for indigents and compensation or other commercial insurance carrier payments are based on the hospital's lowest established rates to the general public, the hospital would be receiving payments equal to the costs from such sources.

"Of course, there will be some ward patients who want to pay their own way but cannot afford full ward charges. Their bills can be discounted by any fair amount. Discounts to patients found worthy after careful investigation can range all the way from 5 to 100 per cent. At the end of every year the total discounts will provide an honest picture of the amount of charity work done.

"3. Starting with the lowest or base rate charges, any percentage needed to balance the budget can be added to semi-private and private room patient charges. Operating on the theory that charges for extras should be the same for all economic levels of patients, the entire increase will have to be made on the day rates.

"It is time for hospitals to get out of the economic woods and establish orderly, business-like procedures. We must 'grow up' business-wise and realize that the public's eyes are focusing on us. Successful conduct of our affairs, orderly and sensible relations with federal, state and local officials, Blue Cross plans, commercial insurance carriers and the general public depend on businesslike methods.

"The keystone of all good business methods is standardized bookkeeping and accounting and the establishment of charges on a cost base."

The problem of further rate increases is a serious one.

Economies alone cannot absorb the anticipated increase, and the cost of hospital care is climbing to a point which will force the ideas of socialized medicine upon the great middle class group of citizens.

The rich can afford the tariff, and the low income earner is eligible for free care in our charity wards or hospitals, but the middle class is struggling under a weight which increases with every new development in medical science.

Nothing is gained by increasing the salaries of incompetents and "deadheads," and an increase may have no other effect than to increase absenteeism. The proper approach to the labor problem, regardless of the size of the hospital, is a detailed job analysis of the entire personnel, the eliminating of all non-productive employees, the increase and equalization of the pay scale for similar jobs, and a definite personnel relations program. An economy which stands out clearly to an executive is the adequate or lack of training displayed by a person in the use or misuse of valuable and ofttimes irreplacable equipment.

An essential feature in the conservation of supplies is a perpetual inventory of stores and equipment. It has many advantages in a hospital where supplies cannot be controlled as rigidly as in industry and where the sudden discovery of an exhausted supply may create an emergency. Accurate cost records point the way to economies, assures information which will assist in the preparation of a budget, and furnishes the groundwork for the comparison of the costs of services with the rate assessed. There is no reason why hospitals should render service to pay-patients at less than cost, any more than we should expect employees to work in hospitals for substantially less than they can earn elsewhere.

Looking back over the years, I would venture that low-paid hospital employees have contributed as much, if not more, to charity than private philanthropy.

The latest price trends, appearing in March, 1946, publications indicate that higher prices are scheduled in steel, lumber, and textiles. These three items are extremely vital to the production of most hospital equipment and supplies.

Indications are that OPA has no recourse other than to adjust prices of raw materials upward, and that price adjustments will again be made in the finished goods field in the near future.

The question of stalling off severe inflation such as occurred after World War I is vital to all of us, but is shrouded in the nation's economic confusion.

The strikes which have occurred have indefinitely postponed our return to mass production, but have also acted as a brake to inflation.

All of the above leads us to the definite problem at hand—of meeting our increased costs in New Orleans.

It has been pointed out that the increased costs will greatly exceed the rate increases recommended, and we sincerely hope that each hospital administrator will endeavor to effect economies before a further rate increase is approved by this council.

It is the hope of this committee that member hospitals of this council will consider the use of the American Hospital classification of accounting so that any further adjustments in rates may be allocated on a cost basis.

At the present time, with private hospitals selling services to so many governmental agencies, it is mandatory that all expenses be properly classified, as the government pays actual cost, and our figures are carefully scrutinized and compared with similar institutions by government auditors.

These social trends in the payment of hospital expenses are evidenced by the large number of patients' bills paid by Blue Cross Plans, Health Insurance and the many governmental agencies such as The Children's Bureau of the Department of Labor, sponsoring the Crippled Children's program, the Emergency Maternity and Infant Care Program, Vocational and Rehabilitation programs under the Department of Education, the Public Health Service Act which will subsidize the erection of non-profit hospitals, the division of Nurse Education of the United States Public Health Service subsidizing the training of nurses, and last but not least, the Veterans' Administration.

The Central Coast Conference, comprising the voluntary hospitals in five counties in California, made the following adjustment in room rates as of January 1, 1946:

	Old Rates	*New Rates*
Wards	$6.00	$7.00
Two bed rooms	7.00	8.00
Lowest priced private rooms	8.00	9.00

Hospitals in New Jersey, New York, Ohio, Florida, New Hampshire, and in general, most hospitals along the East and West Coasts have recently increased their rates $1.00 per day.

Some hospitals have added a flat 10 per cent to the bill and many have increased private rooms $1.00, two bed rooms 75 cents, and wards 50 cents per day.

The committee recommends the following increases in day-rate service only for member hospitals in New Orleans:

Wards, increase of 50 cents per day.

Two bed rooms, increase of 50 cents per day.

Nursery, increase of $1.00 per day, making total fee $2 per day.

Minimum priced rooms, increase of 50 cents per day.

All other private rooms, increase of $1.00 per day.

This schedule will increase the average hospital's revenue from patients about 5 per cent, whereas the outlook for the increase in costs is several times greater.

The value of group action is as important to employers, as it has proven to employees, and if we expect to hold or stabilize hospital costs and rates, we must join together through this council in obtaining current and expert advice and in uniform action in our personnel and public relations. The committee therefore requests that all members representing private hospitals express their opinion in regard to the amount of the rate changes suggested, and that the effective date of the change be voted by the council.

FERNANDEZ TO BE DIRECTOR OF LAFAYETTE CHARITY HOSPITAL

Mr. Robert L. Pettit, director of the State Department of Institutions, announced that Dr. Julius M. Fernandez of Morgan City has been appointed superintendent of the Lafayette Charity Hospital. Dr. Fernandez graduated from Tulane University School of Medicine in 1940 where he was an outstanding student; he was a member of Alpha Omega Alpha which indicates he was in the first ten in his class. Mr. Pettit is to be congratulated upon making such an excellent appointment.

During March Dr. J. W. Atkinson, of Gretna, took a four-week course in psychosomatic medicine at the Temple Medical School. The visiting physicians at this course heard specialists and saw films and demonstrations of various technics.

THE AMERICAN COLLEGE OF RADIOLOGY

The annual meeting of the American College of Radiology will be held in the city of San Francisco, at the Palace Hotel, on June 29. The American Radium Society will meet at the Palace Hotel on June 30 and July 1.

FELLOWSHIPS IN HEALTH EDUCATION

Fellowships for one year of graduate study in health education, leading to master's degree in pubbilc health, are being offered to qualified men and women by the U. S. Public Health Service through funds made available by the National Foundation for Infantile Paralysis.

The fellowship provides a year's study in public health education in an accredited school of public health. This training includes an academic year of eight or nine months and three months of supervised field experience in community health education. The courses include, public health administration, epidemiology, public health and school health education, problems in health education, community organizations, and information technics.

A stipend of $100 a month for the entire period of academic and field training, tuition, and travel expenses for field experience will be paid. Travel to and from the university at the beginning and end of training is not included.

Fellowships are effective for the academic year starting in the fall of 1946.

Men and women, in sound health, between the ages of 22 and 40, who are citizens of the United States and who meet the entrance requirement of the School of Public Health of their choice may make application. In addition to a bachelor's degree from a recognized college or university, courses in the biological and/or physical sciences, sociology, and education may be required. Training in public speaking, journalism and psychology and work experience in a related field are desirable.

Application forms may be obtained fram the Surgeon General, U. S. Public Health Service, Washington 25, D. C. Completed forms, accompanied by two recent photographs, and official transcript of college credits, and a 500-word statement of why applicant is interested in entering the field of health education, must be in the hands of the Surgeon General by June 1, 1946. Only complete applications will be considered.

Veterans with necessary qualifications are encouraged to apply for fellowships. The subsistence allowance for veterans granted under the G. I. Bill of Rights will be supplemented by fellowship funds to bring the stipend to $100 a month.

Candidates must maintain a scolastic average of "B" to retain fellowship.

Persons accepting fellowships will be expected to work in the field of health education for at least two years after completion of training.

The U. S. Public Health Service and the National Foundation for Infantile Paralysis assume no responsibility for placing fellows in positions.

Schools of Public Health include: Columbia University, Harvard University, John Hopkins University, University of California, University of Michigan, University of Minnesota, University of North Carolina, and Yale University. Candidates will be permitted to express their choice of schools, and efforts will be made to grant first or second choice in so far as possible.

These fellowships are not available to employees of health departments, as grant-in-aid funds are available for the training of such personnel.

AMERICAN MEDICAL ASSOCIATION MEETING

During the Secretary-Editor's Conference of the A. M. A. held recently in Chicago the Oklahoma State Medical Asociation announced that it was sponsoring a special train to the 1946 session of the A. M. A. to be held in San Francisco on July 1-5, and invited all other state associations interested to join the Oklahoma physicians on this trip. This will be an all-expense tour with the exception of meals, and the total time to be taken by the trip will be 16 days. This will include travel time from Kansas City, a central assembly point, to San Francisco with five days in the convention city and the balance of the trip, a tour through the Northwest, including Portland, Mt. Rainier, Seattle, Victoria, British Columbia, and Yellowstone National Park.

The Oklahoma State Medical Association has approved the Rainbow Travel Service, authorized travel agents, managed by Mr. Harry E. Kornbaum, and Mr. J. F. Johnson, Jr., of Oklahoma City, to make complete plans with other state medical associations and individual physicians who are members of their component state associations.

For further detail communicate with Mr. Kornbaum, Rainbow Travel Service, Inc., First National Building, Box 652, Oklahoma City, Oklahoma.

INFECTIOUS DISEASES IN LOUISIANA

The weekly morbidity report for the State of Louisiana for the week ending March 2 contained the previous four weeks' report for venereal diseases. During the month of February there were listed 1680 cases of gonorrhea, 1606 of syphilis, 56 of chancroid, 34 of granuloma inguinale and 14 of lymphopathia venereum. Unclassified pneumonia headed the list of other diseases reported this week, there being 174 cases listed. This was followed by 159 cases of influenza, 122 of cancer, 45 of pneumococcic pneumonia, 23 of measles, 19 each of hookworm and rheumatic fever and 11 of puerperal septicemia. Of the diseases listed the following were from military sources: gonorrhea 120 cases, syphilis nine, chancroid two and pneumococcic pneumonia one. Orleans Parish reported three cases of meningococcus meningitis and Ascension, St. Tammany and Terrebonne one each. Poliomyletis was reported by Claiborne and Ouachita Parishes, each having one case. The report for the next week, ending March 9, showed a sharp increase in the number of cases of measles, there being 286 reported. There were also reported 37 cases of German measles. The influenza cases numbered 152, which was seven fewer than reported the previous week. Other diseases occurring in numbers greater than ten were as follows: pulmonary tuberculosis 55, unclassified pneumonia 34, chickenpox 27, hookworm 21, mumps 17 and pneumococcic pneumonia 11. There were ten cases of scarlet fever and ten of whooping cough reported this week. There were two cases of meningococcus meningitis reported from Orleans Parish and one each from Caddo, Calcasieu, East Baton Rouge and Rapides. Calcasieu and Webster Parishes each reported one case of poliomyelitis. There were reported for the week ending March 16, 337 cases of measles a still larger number than reported the previous week. Also reported were 24 cases of German measles. There was a rise in the number of influenza cases this week; 405 being reported. Other diseases in numbers greater than ten were as follows: 42 of mumps, 31 of chickenpox, 25 of unclassified pneumonia, 23 of septic sore throat, 18 of scarlet fever, 17 of malaria and 12 of pulmonary tuberculosis. One case of meningococcus meningitis was reported in each of the following parishes: Avoyelles, Grant, Orleans, Pointe Coupee, St. Mary and Terrebonne. Only one parish, Iberville, reported poliomyelitis this week and this parish had only one case. The report for the week ending March 23 showed a decrease in the number of cases of measles, 260 being reported, which number included 27 of German measles. One hundred and fifty-eight cases of pulmonary tuberculosis were reported this week, followed by 88 of influenza, 31 of chickenpox, 26 of hookworm, 18 of unclassified pneumonia, 16 of diphtheria and 12 of mumps. Nine cases of meningococcus meningitis were reported this week, four of which occurred in Acadia Parish and one each in East Baton Rouge, Orleans, Rapides, St. Martin and Terrebonne. Cameron Parish reported one case of poliomyelitis.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce reported for the week ending March 9, 159 deaths in the City of New Orleans, divided 114 white and 45 colored; 12 of these deaths occurred in children under one year of age; nine white and three colored. There was a rather sharp decrease in the number of deaths occurring during the week of March 16; eighty-one white persons died and 45 colored, making a total of 126. Almost the same number of infants died this week as for the previous week, however, there being nine white and two colored. For the next week, which ended March 23, the number of deaths increased. A total of 143 individuals expired. Of this number 102 were in the white race and 41 in the colored and only four of these occurred in children under one year of age. The March 30 report included 125 deaths in the city, 80 white and 45 colored and of this number the number of deaths in children under one year of age was two and six respectively. The last report received was for the week ending April 6 and indicated 132 deaths in New Orleans, divided 81 white and 51 colored. This week there were reported only five infant deaths, two in the white race and three in the colored.

J. F. POINTS, M. D.
(1880-1946)

Dr. J. F. Points died at the Hotel Dieu on Monday, April 8 at the age of 62. Dr. Points graduated from Tulane University in 1903 and had an internship at Charity Hospital, succeeded by a residency at Hotel Dieu. He was connected with Tulane University, and Loyola teaching staff for some years and was a visiting surgeon at Charity Hospital for fifteen years. He was an active member of the Knights of Columbus, the Association of Commerce and the Parish and State Medical Societies.

HENRY NATHAN BLUM
(1876-1946)

Dr. Henry Nathan Blum, a native of Baton Rouge, died in New Orleans on April 13. He had been senior surgeon at Touro Infirmary from 1903 until 1906, and senior associate in ophthalmology from 1910 until 1926. From 1926 to 1938 he was chief of the hospital's department of ophthalmology and at the time of his death he was consultant in ophthalmology. He was also senior ophthalmologist at Charity Hospital from 1930 until 1934 and taught ophthalmology at Tulane's medical school from 1923 until 1925. In 1931 Dr. Blum became professor of ophthalmology and Chief of the Department at L. S. U. School of Medicine, which position he held until 1934.

LEE LANDRUF COLLINS
(1881-1946)

Dr. Lee Landruff Collins died February 18 at the age of 65 years and 2 days. He was born at Montgomery, Louisiana on February 16, 1881 and was the eldest son of J. W. Collins (deceased) and Mary Elizabeth McLemore.

He was a member of the American Medical Association, Louisiana State Medical Society and had been a member of the Parish Medical Society until his health failed. He attended St. Louis University and graduated from Memphis Medical College in 1906, having taken postgraduate work at the University of Tennessee School of Medicine.

He administered to the sick to the end even on his death bed and will be missed by friends and most especially by the sick and suffering. Dr. Collins was a member of the following Fraternal organizations: Blue Lodge F.&A.M., Royal Arch Masons and Crowley Council No. 28 Royal and Selected Masons.

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BOOK REVIEWS

Personality Factors in Counseling: By Charles A. Curran, Ph.D. New York, Gune & Stratton, 1945. Pp. 287. Price, $4.00.

To the reader unfamiliar with psychologist Carl R. Roger's theory and practice of "non-directive psychotherapy" this book by Dr. Curran will present new ideas that may be difficult to accept. For this student of Dr. Rogers has contributed further confirmatory data to the accumulating research on non-directive counseling as a definite and unique kind of psychotherapy.

It is particularly important that the physician and the medical student become acquainted with the viewpoint inherent in this therapeutic technic —that the social history of an individual who seeks help in solving his personal problems is important only in so far and in what manner it is presented and discussed by the person himself. What is important in the past is what is brought out by the person, during interviews, in terms of his feelings and how he accepts them. No formal social history is taken and no questions are asked or answered by the therapist. The counselor reflects or mirrors the feelings expressed by the client, limits his role to this function, and dispenses with the generally accepted processes of "direct treatment," such as diagnosis, evaluation, advising, reassurance and goal-setting. This reflection of client-feeling is termed "structuring," and consists in explaining and defining for the client his own role and that of the counselor during the therapeutic interviews, and what may be gained from them.

Dr. Curran, who is a Catholic priest, typifies the increasing interest shown by religious workers in a scientific study of human personality. He has taken one case, and from twenty phonographically recorded interviews has analyzed the release of forces of growth and development within an individual, which changed this withdrawn, conflict-ridden boy into an independent and self-confident man. He proves conclusively that speech, thought and emotion—seemingly so intangible—can be subjected to scientifically objective analysis. And he illustrates through the case material the unique tenet of the non-directive approach—the client's ability, when freed from tensions and with acquired insight, to formulate and carry out an independent and workable solution of his problems.

The style renders the book readable, although at times it seems needlessly repetitious.

This book, together with Roger's "Counseling and Psychotherapy," is recommended as required reading during the medical student's senior year in psychiatry.

MARION FONT.

The Basis of Clinical Neurology: The Anatomy and Physiology of the Nervous System in Their Application to Clinical Neurology: By Samuel Brock, 2d ed. Baltimore, Williams & Wilkins Co., 1945. Pp. $3.93. Price $5.50.

Entirely reset and extensively revised the second edition of The Basis of Clinical Neurology is thoroughly up to date. Here gathered together are materials from embryologic, anatomic and physiologic sources that lead to an intelligent understanding of the mechanics underlying neural dysfunction, making the book a sound combination of pedagogic clarity with scholarly amplitude. The author handles controversial points with sureness and dexterity.

The book starts off with a brief review of the unit of the nervous system, the neurone and the basic physiologic unit, the reflex arc and then proceeds to consider the anatomy and the role of the spinal cord, the brain stem, cerebellum and higher centers. Special chapters include the vascular supply of the brain and the spinal cord with the clinical syndromes resulting from disturbed circulation, the regulative nervous system and its function and the cerebrospinal fluid. A chapter on posture summarizes our present knowledge of muscle tone.

Dr. Brock is not only a teacher but a gifted, inspired explorer of that important realm of material, abnormal conditions of the nervous system and a writer of real literary merit. His book is clear and bright and complete in itself and arouses a new freshness of viewpoint and a new breadth of understanding.

C. P. May, M.D.

Preventive Medicine and Public Health: By Wilson G. Smillie, A. B., M. D., D. H. P., Sc. D. New York; The Macmillian Company, 1946. pp 548. Price, $6.00.

This book, as the author states in the preface, is written for medical students planning to practice clinical medicine and willing to accept the obligation to their patients and to their community to prevent illness and to promote family and community health. This viewpoint is maintained throughout what careful reading proves to be a carefully integrated and a well balanced text. For example, the chapter on vital statistics is written (1) to indicate the importance of the physician as a collector of accurate vital data, (2) to show the importance of proper analysis of these data, and (3) to teach the medical student to read his medical literature with a critical eye. The chapter does just that and omits procedures that can be followed only by the professional statistician. Pages devoted to environmental sanitation are reduced in number in comparison with space given this subject in other texts, since the author justifiably argues that the physician must be acquainted with the principles of the various phases of sanitation but will never have the responsibilities of administration in any of these sanitary endeavors.

The ability to write succinctly is certainly indicated in the chapter on national health services in which the basis of national health services, growth and development, present plan of organization, and present activities are all boiled down into nine easily read pages. Discussions on the work of the public health nurse and adult health protection and promotion are as modern as DDT. Twenty-one tables and 41 charts, graphs and illustrations are used. These are well chosen and present new data.

This book is admirably developed as a text in medical school courses and is within the price range of students financing their own medical education.

Ralph H. Heeren, M. D.

PUBLICATIONS RECEIVED

Bellman Publishing Company, Inc., Boston: Vocational and Professional Monographs: Physiotherapy, by Thomas Francis Hennessey, M. D.

Brooklyn Medical Press, Inc., New York: The Venous Pulse and Its Graphic Recording, by Franz M. Groedel, M. D.

The Commonwealth Fund, New York: Medicine in Industry, by Bernhard J. Stern, Ph.D.

Froben Press, New York: Evolution of Plastic Surgery, by Maxwell Maltz, B.S., M.D., Sc.D., F.I.C.S.

Grune & Stratton, Inc., New York: Group Psychotherapy, by J. W. Klapman, M. D. Shock Treatments and Other Somatic Procedures in Psychiatry, by L. B. Kalinowsky, M. D., and Paul H. Hoch, M. D.

Paul B. Hoeber, Inc., New York: Ambulatory Proctology, by Alfred J. Cantor, M. D.

University of Kansas Press, Lawrence: A Malariologist in Many Lands, by Marshall A. Barber.

Lea & Febiger, Philadelphia: Diseases of the Adrenals, by Louis J. Soffer, M. D.

MacMillan Company, New York: Normal Lives for the Disabled, by Edna Yost in colloboration with Dr. Lillian M. Gilbreth.

Meador Publishing Company, Boston: Suggestion and Hypnosis Made Practical, by Samuel Kahn, M. D., Ph. D.

C. V. Mosby Company, St. Louis: Synopsis of Physiology, by Rolland J. Main, M. D.

Revere Publishing Company, New York: New Drugs, by Arthur D. Herrick.

W. B. Saunders, Philadelphia: Gastro-enterology, by Henry L. Bockus, M. D.

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FIBERGLAS PACKS IN PELVIC SURGERY

RHETT G. McMAHON, M. D.,
AND
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It is generally conceded by surgeons that the immediate and remote mechanisms in the production of postoperative adhesions are due to physical factors.

The almost universal use of hot, wet, absorbent surgical gauze material as laparotomy packs or pads lays the foundation for consequent postoperative complications. The rough, abrasive characteristics of this type of material are well known to all operating surgeons.

Not infrequently, in prolonged procedures, the surgeon must actually strip the packing material from the intestines which reveals a red, raw and irritated surface upon which the imprint of the meshwork of the cotton gauze is visible. Coupled with this traumatic, mechanical peritonitis there is the associated factor of thermal injury to the viscera produced by the heat of the moist, wet packs.

With these objections to the presently available material in mind, we have recently adopted and successfully used fiberglas* cloth packs in pelvic surgery. These packs are made from fiberglas cloth in double thicknesses approximately 9-10 inches in width and approximately 38-40 inches in length. The entire circumference of the pack, with the frayed edges turned in, is sewn on a machine with fine silk or cotton thread. Vertical and horizontal reinforcements of the same material are used at intervals of two to four inches. The completed packs may be autoclaved and used wet or dry in the actual surgical procedure.

Care should be taken in the process of reclamation for subsequent use. The packs may be easily cleansed by repeated immersions in clear water or by the simple process of allowing tap water to flow over their surfaces for a short time. Hand rubbing the material during the procedure will result in tears of the individual fibers and holes in the material. For the same reason they should not be wrung out in drying, but should be hung on or over a drying rack.

Fiberglas is an inorganic, non-toxic, non-allergenic, non-sensitizing and chemically stable substance which produces no harmful effect upon human tissue. It is a pliable substance, possessing great tensile strength and a high degree of dimensional stability. Fiberglas has a marked resistance to high temperatures, as well as to acids (except hydrofluoric acid), steam and corrosive fumes.

Fiberglas is non-hygroscopic, the material adsorbs but does not absorb moisture. Adherence or trauma to the intestines is impossible due to the physical characteristics of the fiberglas cloth. When used dry and at room temperature the thermal factor of trauma is eliminated.

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*Fiberglas cloth (ECC-108), manufactured by Owens-Corning Fiberglas Corporation, Toledo 1, Ohio. This is a cloth of plain weave, made of fiberglas continuous filament yarns (ECD-900½), 60 warp yarns and 47 fill yarns per inch. Two mils thick, the cloth weighs 1.43 oz. per square yard. Fiber diameter of the glass filaments in the strands from which the yarns are fabricated is in the range of 23 hundred thousandths of an inch (.00023").

SUMMARY

We believe that the adoption of fiberglas cloth packs in all types of surgery requiring packing or walling off of the intestines or adjacent viscera will materially decrease the incidence of postoperative adhesions.

The incorporation of fiberglas radio-opaque tracer threads in the packs and the concomitant use of small sponges with similar tracer threads will relieve many surgical minds in postoperative complications of questionable and unexplainable etiology.

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THE FUNCTION OF THE CORONER'S OFFICE IN RELATION TO THE PHYSICIAN*

C. G. COLE, M. D.

NEW ORLEANS

I had the honor of addressing the members of the Orleans Parish Medical Society some few years ago, to be exact about eleven years ago, as your Coroner. I was quite reluctant again to appear before you to discuss a similar subject. However, your President called to my attention the fact that since 1934 a large number of new members had joined our ranks and had selected this city in which to practice their chosen profession, and it was my duty to inform them regarding my duties, as your Coroner, and to make known to them their responsibilities in the premises. So, I am here in response to your President's call and command.

I have always had the welfare and the interest of the members of our profession at heart, and I believe my activities, especially in legislative matters, will justify my claiming a sincerity of common interest and cordial relationship existing not only between the members of this society and myself personally but also in an official capacity as your Coroner.

In an office like this, where so many varied and allied subjects and questions, so vital to you, your patient, the public, the family and this office come up for decision, there must of necessity arise some difference of opinion, regarding the final disposition of such cases. However, I want you to know that my only interest is to arrive at a proper conclusion as to the cause of death, which is my responsibility as prescribed by law, and I shall, at all times, appreciate your assistance and cooperation in my efforts to secure a proper and final diagnosis in these cases.

It has been my policy in all cases, where the attending physician is involved, to communicate with him in an effort to secure his opinion as to the diagnosis, and should my office assistants phone you, regarding any of your patients, I would appreciate your full cooperation to this end.

It has also been the policy of this office, at all times, to accord the public every courtesy and consideration and to make these poor unfortunate relatives feel that they are dealing with people who sympathize with them in their troubles and that we are always glad to do everything we can for them, in this, their hour of grief.

Except in a very limited number of jurisdictions, the investigation of the cause of deaths that require the attention of any agency of government is made by the office of coroner. It is not necessary to trace the history of this ancient office, except to mention that it was transplanted from England to the original Colonies; from them it was transferred to the States. In twenty-four of the States the office is provided for by the State Constitution. The duties of coroner are prescribed by statute. Fortunately, the statutes relating to coroners in Louisiana have undergone essentaial modifications that better fit them to meet modern conditions.

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*Read before the Orleans Parish Medical Society, March 11, 1946.

All insane or suspected mental cases in the Parish of Orleans are committed through the Coroner's Office to the City Hospital for Mental Diseases and all commitment or interdiction proceedings for transfer to the East Louisiana State Hospital at Jackson, Louisiana, are executed through this office, and their respective petitions filed in the Civil District Court by the Coroner, thereby adding quite a volume of work, not generally thought of as belonging to this office. The Coroner is also ex-officio City Physician in which capacity he is called upon to examine and treat many of the inmates of the Parish Prison and House of Detention, for whose health and medical welfare he is responsible.

The following is a summary of the cases handled by this office during the years 1935 through 1945: natural causes 22,772, miscellaneous accidents 1,807, homicides 780, suicides 545, auto accidents 726, steam railroad fatalities 89, electric street railway fatalities 49, mortorcycles eight, airplane six, motorbikes three, bicycles seven, legal executions seven, criminal abortions 61 and violent deaths that happened out of parish 1,362.

The following are some of the cases to be reported to the coroner's office:

1. All deaths occurring in any hospital within 24 hours of admission.
2. All injured cases, old or recent.
3. All deaths due to unknown causes.
4. All deaths due to suspicious causes.
5. All abortion cases whether self-induced or otherwise.
6. All violent deaths.
7. All sudden deaths.
8. All accidental deaths.
9. All cases without medical attendance within 36 hours, prior to the hour of death.
10. All deaths due to drowning, hanging or strangulation.
11. All deaths due to gun shot, shot gun, stab wounds, burns, electricity, lightning, tetanus, and so on.
12. All homicides.
13. All suicides.
14. All poison or suspicious poison cases.
15. Prematures.
16. Stillborns.

PERMISSION OR AUTHORITY FOR AUTOPSIES

It is advisable at all times to be extremely cautious in this matter to avoid any unpleasant complication which might arise where unauthorized or improperly authorized postmortems are done. It is best to get this permission or authority in writing, or if not in writing to secure dependable witnesses to the granting of such permission. No autopsy should be done without securing proper authority, for without this you may run the risk of unpleasant suit for damages. It has been held in many courts, that although the deceased has during his or her life willed his or her body for purposes of dissection, the family can or may prevent its dissection.

Certain postmortem examinations may, however, be legally performed or ordered regardless of the rights, wishes or feelings of relatives or friends by a coroner or certain other officers of the state or parish as part of their official duty.

In all other cases, authority or permission should be secured from or granted by the relative or persons claiming or responsible for the burial of the body. Where none of the relatives are present or cannot be contacted, it is wise, for your protection, to make sure that those acting for the relatives in granting permission for the postmortem have sufficient right or authority from the family to do so, in case one of the kin should, as often happens, becomes vicious and threatens to prosecute or does prosecute after the autopsy has already been performed.

There seems to be some misunderstanding by some of the residents and interns, as to how a case should be handled, when the family grants permission for an autopsy on a coroner's case. It is very simple. Once a coroner's case, any permission for autopsy by the relatives or friends is null and void and should not be performed unless consented to or granted by the Coroner. You may ask, why then, do I insist on securing the permission of the family in many of these cases? Experience has taught me that this procedure insures protection to the doctor, the hospital and to me. It makes the relatives feel that every consideration is being accorded them. After all these poor and saddened relatives should be shown some courtesy and extended our deepest sympathy in this, their hour of profound bereavement. However, if they should refuse to grant this permission, the postmortem may be legally performed or ordered, regardless of their wishes in the matter.

CERTIFICATION OF DEATH

In the matter of inheritance, insurance and other legal matters, every physician should feel it to be his duty to the family and relatives to accord them that protection, which they certainly deserve, by accurately and completely filling out all death certificates.

For the same reason, all coroner's cases should be certified through this office, and if the physician would properly refer the family, undertaker or insurance companies to our office for such certificates, it would assure the family of the deceased the protection they deserve, and would often prevent the long delay in collecting their much needed insurance.

All injured cases, of any nature or kind, and whether old or recent, and whether death was due to some concurrent or complicating disease, like pneumonia, continues to be a coroner's case, and should be reported to his office and cause of death certified to by him.

If a physician is not positive as to the cause of death, or if there is any reason to believe death has been due to violence or to suspicious causes, he should disregard any pressure that might be brought by the surviving members of the family and do his duty as laid down by the statutes of the state and refuse to sign a certificate. In cases coming under this category, the coroner is automatically required to assume charge of the case and, in cooperation with the attending physician, thoroughly investigate the cause of death.

The following is found in Section 2, Act No. 241, July 14, 1926:

"That it should be the duty of the coroner to hold an inquest or make an investigation in all cases of sudden death, violent death, due to unknown causes, death without attending physician or other remedial treatments or deaths in which there is suspicion as to the cause, with the right to other autopsies in any such cases in his discretion." The Coroner may summon witnesses at such time or place as he shall direct, and may enforce their attendance by attachment.

Article 39 of the Code of Criminal Procedure for the State of Louisiana says:

"It shall be the duty of any physician and of any person in charge of any hospital or institution, or of any person who shall have first knowledge of the death of any person who shall have died suddenly, accidentally, violently or as the result of any suspicious circumstances, or without medical attendance within 36 hours prior to the death, or in any case of death due to what is commonly known as an abortion, whether self-induced or otherwise, to immediately notify the coroner of the death. It shall be unlawful for any undertaker, embalmer or other person to remove any body from the place where such death occurred, or to prepare same for burial or shipment, without first notifying the coroner and receiving permission to remove the body."

Article 40—"Any person who shall fail to comply with the provisions of this title shall be deemed guilty of a misdemeanor and upon conviction thereof shall be sentenced to pay a fine not to exceed one hundred dollars or to be imprisoned in the parish jail for a period not to exceed ninety days, or may be both fined and imprisoned as aforesaid."

In closing let me appeal to you for your cooperation in reporting all coroner cases to my office as soon as possible, thereby assuring better service to you and your patient and the public at large. The sooner we know about these cases the better we are able to institute a thorough investigation of the case and to turn the body over to the undertaker and family. It is extremely important that the embalming be done as soon as possible properly to prepare and preserve the bodies.

I assure you that my office is at all times ready and willing to cooperate with you and I shall appreciate any opportunity accorded me to advise and consult with you regarding matters connected with this office, always keeping in mind my duty to you, the family and the public.

VITAL STATISTICS*

THEIR RELATIONSHIP TO THE PHYSICIAN AND TO THE BOARD OF HEALTH

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NEW ORLEANS

Statistics is that branch of science which deals with the frequency of occurrence of different kinds of things, or with the frequency of occurrence of different attributes of things.

Vital Statistics is that branch of the science of demography which considers the application of statistical methods to certain vital facts. The registration of vital data and their analysis comprise the field of vital statistics. The vital events in human life are births, deaths, sicknesses, marriages, and divorces. Vital statistics, therefore, is the registration and analysis of the facts pertaining to births, deaths, sicknesses, marriages, and divorces. This paper will be limited to a discussion of births, deaths, and sicknesses, since the practicing physician is not directly involved in the registration of marriages and divorces.

Vital statistics supply a fund of useful information that is otherwise unobtainable. They are an essential and important part of medical and public health fields and serve to present a composite picture of the life history of a people or of a community. Vital data obtained from registration aid the medical profession and health officials in knowing when, where, and to what extent, disease exists throughout a given community. A health department's program is based upon a study of the facts pertaining to births, deaths, and illness in the community. Current analyses made of the causes of death among the various age groups by sex and color are of importance in directing a program of preventive medicine and health education.

Besides providing such crude rates as birth, death, and stillbirth, vital records provide the health officer with specific rates such as maternal and infant mortality, and death rates from specific causes.

Vital statistics finally serve as a means of comparing one community with another, one state and one nation with another.

But aside from the purely statistical aspect, by careful scrutiny of vital records the health officer can provide himself with facts that might otherwise be unavailable. Stillbirths suggest follow-up of mothers by the venereal disease control officer, education and supervision of midwives, and investigation because of possible criminal abortion; death certificates are oftentimes the first report the health department receives of certain communicable diseases, and the data contained in them are important adjuncts to epidemiology, quarantine, and program planning. Deaths from such diseases as typhoid fever, typhus fever, undulant fever, and malaria, are of utmost interest to the sanitary officer.

Because of the direct relationship of vital statistics to the health and welfare of the people, it has gradually become recognized that they are a direct governmental function and, as such, have been incorporated in official health department practice.

BIRTHS

All children who breathe after birth should be registered as births. Stillbirths are registered as such on an individual certificate and are not recorded as either births or deaths.

Birth registration and statistics are important from a community standpoint because they are used to:

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1. Ascertain the natural increase of population (excess of births over deaths).

2. Furnish information regarding the fertility or fecundity of the population.

3. Determine the frequency of illegitimacy.

4. Compute the maternal mortality rate, the infant mortality rate, and the neo-natal mortality rate.

Birth data show where the babies are and make possible such observance and protection as is desirable for the health department to extend.

From the individual's own standpoint birth registration establishes the date of birth and the child's parentage. It may be required to prove age for school attendance; permission to work; license to get married; for pension grants and other social security benefits; for military duty; for jury duty; for voting; for obtaining a passport; for bequeathing and inheriting property.

DEATHS

Death registration is usually more complete than birth registration because of the law requiring permission to transport or inter a dead body. It is only proper that the time, place, and cause of death of each individual be made a permanent record for both sentimental and legal reasons.

Death records show by statistical methods:

1. The extent and rate of change in the population produced by deaths.
2. The average duration of life.
3. The relative frequency with which the several causes produce death.
4. An index of the prevalence of certain diseases.

Registration of deaths promotes prevention and detection of crime through restrictions placed upon the disposal of dead bodies. From the individual's standpoint it furnishes evidence in inheritance of property, and in the settlement of life insurance and social security benefits. There are many other sociologic and geneologic uses to which mortality registration and statistics may be put.

Listed below are common errors of commission or omission committed by physicians in filling out death certificates.

1. Illegibility of handwriting, or frequently the entire certificate is legible except the signature.

2. Failure to state the principal cause of death, sometimes giving final symptoms under "contributory causes."

3. Use of improper or general terms for cause of death such as: heart failure, convulsions, peritonitis, natural causes, senility, or pulmonary hemorrhage.

4. Giving a list so long that one wonders how the poor patient lived as long as he did, such as: Hypertension, chronic myocarditis, generalized arteriosclerosis, chronic nephritis, cardiac decompensation, cirrhosis of the liver, chronic cholecystitis, cholelithiasis, and caricoma of the prostate, with pneumonia and uremia thrown in as contributory causes. A list such as this you will readily recognize as pathologic findings, which should not be listed on the death certificate unless they were causes of death.

Of course the health department uses both the International List of Causes of Death and the Joint Manual for determining which cause takes precedence. In the imposing array given you above the death would be allocated to cancer of the prostate.

The family physician should not certify to deaths from any form of accident or trauma, regardless of the time when the accident occurred. For example, a patient may die of hypostatic pneumonia six months after a fractured pelvis suffered in an automobile accident—it is still a coroner's case, and would be classified as a death due to a motor vehicle accident.

Family physicians should not certify deaths due to abortion, homicide, suicide, drowning, electric shock, poisoning, sudden deaths, and persons found dead. In any case of doubt the death should be reported to the Coroner's Office.

DISEASES

No health department can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring. It is important that physicians and hospitals report all cases required by law. Many doctors have found it easier to have their secretary fill out the reports at the end of each day's business and send in to the health department.

It may seem that the list of reportable diseases is entirely too long, but each report furnishes just that much more data to be used in studying that particular disease. Cancer, for example, is a reportable disease, but we receive few reports of cancer, yet it is our second cause of death. No one knows how frequently cancer occurs, and we can only arrive at an estimate from the death certificates.

Finally, it must be pointed out that statistical material is only as good as the original enumerator or observer. If the original observations and data are accurately recorded, then the use of the material is subject only to the limitations of the user. Statistics are facts expressed in figures; if the figures are to be correct then the original facts must be correctly observed and recorded.

SUMMARY

1. Vital statistics have been defined and the importance of them to the community and to the individual has been stated.
2. The intimate relationship of vital statistics to the medical profession and to public health officials has been given.
3. Certain uses of vital statistics have been given.
4. The importance of complete and accurate recording of vital facts has been emphasized.

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TWO INTERESTING CASES OF RECTOVAGINAL REPAIR

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NEW ORLEANS

One of the most distressing conditions for any woman is her inability to control her bowel movements as a result of an injury or a laceration of the sphincter ani muscle. In all series of this condition reported, parturition accounted for nearly 98 per cent, and rape, or traumatic perineal injuries in young girls for the other 2 per cent. However, one of the two cases to be reported, I consider most unique; first, in that it was produced in the baby immediately after birth, and secondly, I cannot find a similar case in the literature. The second case is considered on account of the time that elapsed between the acquiring of the injury during labor and the operation for its repair, and the resulting difficulties that had to be overcome as a result.

Before discussing each of these cases in some detail, I should like very much to present a few figures on complete lacerations of the perineum as gleaned from the records of the Touro Infirmary and the Charity Hospital, and to attempt to draw some conclusions therefrom.

From the Charity Hospital, during a selected period from 1922-24 inclusive, there were 2,737 gynecologic operations on white patients, with 34 repairs of old complete tears, or an incidence of 1.22 per cent. In the colored, during the same period, there was a total of 3,408 gynecologic operations and five for complete lacerations, 0.14 per cent.

Now in the period of 1942-44 inclusive (twenty years later) the total white gynecologic operations were 3,476 with nine complete lacerations repaired, or about 0.26 per cent and in the colored, 5,423 gynecologic operations with four complete lacerations repaired, or 0.07 per cent.

In the first instance, it is seen that there were about eight white cases to one colored, and in the second instance, a ratio of about three to one. These figures are very interesting from two standpoints. In the first, it shows again, as I called attention to in a previous paper some years ago, that birth injuries are much greater in the white race than in the colored. Secondly it shows a decrease in incidence in both races,—this attributable most likely to better obstetrics. Now if the ratio of occurrence for the two periods is averaged, it is found to be about five white to one colored, practically the same as shown by Arnell and Fertita.

In a further breakdown of the statistics for the years 1922-24, 36 cases out of the total of 39, wherein it was possible to determine where the delivery occurred, it is seen that 28 were delivered in the rural sections, eight in the city but outside of the hospital, and two in the hospital. For the comparable period of 1942-44, data could be obtained in this regard on 11 out of the 13 total cases, these showing five rural, one city, four hospital, and one midwife delivery.

Again, reviewing the figures, out of a total of 52 complete repairs, we find that 21 were either forceps or breech deliveries, an incidence of 40 per cent.

The old platitude that the best cure for any condition is its prevention surely is true of complete perineal tears. In the vast majority of the cases, poor or indifferent obstetrics is most often the cause and can, as stated by most authors, be obviated by the proper procedure. Since it has become almost common practice in hospital obstetrics to do low forceps and episiotomy on most primipara, complete tears are becoming rare indeed.

At the Touro Infirmary for the years of 1940-44 inclusive, there were 7,859 deliveries and 14 complete tears, or an incidence of 0.18 per cent. These were all white, hospital deliveries.

All are in accord that surgery is the only treatment for complete perineal injuries, for unlike some few vesicovaginal cases, there is no spontaneous cure. Of course, the ideal is the immediate repair at the time of delivery. However, if this cannot be attained, they should be repaired as soon as postpartal involution is complete. Most often delay is usually the result of ignorance and/or fear on the part of the patient. Long delay, for a period of many years, as in the second case to be reported, can cause the repair to become much more difficult due to changes in the tissues that one finds in the fifth decade of life.

There are two operations for the repair of complete tear of the perineum, namely, the flap method and the layer method. The latter is the more commonly used of the two.

The preoperative preparation is as follows: The patient is put on a non-residue diet for some four days previous to the date of operation. The night before the operation she is given a saline enema and also the morning of the operation. No purgatives are used. In brief the technic of "layer operation" is as follows: Under gas anesthesia, the patient is prepared by means of scrubbing with soap and water, and alcohol, and then a liberal application of tincture of merthiolate.

The sphincter ani muscle is then stretched so as to make it easier to approximate the divided edges. A typical "H" incision is used. The rectovaginal mucosa is separated and the edges of the lacerated rectal mucosa are identified. These are freshened up so as to promote better healing. The edges of the rectal mucosa are then sutured with interrupted plastic dermal or nylon, the knots being tied in the rectum. One point in the technic is this line of suture should be carried far enough down, so the rectal dimple is restored. The next procedure is to isolate the divided ends of the sphincter ani muscle. These are then brought together and sutured with two figure of 8's chromic No. 1. From this stage on the operation consists of a routine perineorrhaphy; namely, bringing together the levator ani muscles and the fascia, the trimming of the excess mucosa of the vagina and the closure of the skin. Formerly a retention suture of heavy dermal or silkworm gut was put through the skin into the sphincter and out the skin of the other side and tied. Since, however, there have been several cases of perirectal abscesses resulting this has been abandoned.

There are two methods of choice of handling the postoperative care. Some physicians allow the bowels to move immediately, most others give a non-residue diet for several days, and also opium pills or codiene to tie up the bowels. About the third to fourth day mineral oil is given and on the morning of the fifth day an instillation of warm olive oil is inserted into the rectum. After the bowels have moved well, the patient is allowed a regular diet. She is kept in bed some seven to eight days and then allowed to return to her home. As soon as she is completely able, she is encouraged to take sitz baths.

CASE No. 1

The first case is that of Miss H. J., aged 22 years. At the time of her birth she had an imperforate anus, and the physician who delivered her inserted a finger into the rectum in the hope of creating an opening. However, a tear was produced from the rectum into the vagina, and through her entire 22 years of life, she has had no control whatsoever of bowel movements, in spite of the fact that temporary surgery was attempted at that time and a further series of operations about the age of seven. The patient had had the usual diseases of childhood, an appendectomy and tonsillectomy, plus anovaginal plastics before mentioned. Menses began at 12, periods every 28 days, lasting five days, with moderate dysmenorrhea.

Physical examination was essentially negative. The patient had the usual preoperative preparation.

Procedure of operation: Under gas anesthesia, the rectal vaginal septum was found to consist of just two layers of mucosa. These were separated and the rectal canal reconstructed by interrupted plastic dermal sutures with the knots tied in the rectum. The rudimentary sphincters were then brought together and sutured across the midline anteriorly with two sutures of chromic No. 1. The levators were then brought in together and sutured with chromic No. 2, interrupted sutures. From then out it resolved itself into a typical perineorrhaphy.

The postoperative course was absolutely uneventful and afebrile, and the patient was discharged from the hospital on the tenth postoperative day. Follow-up at frequent intervals until date show that the patient has complete control of her bowels, and is entirely comfortable.

One point I should like to make in connection with this case. In the event of marriage and conception, it is highly desirable that this patient have a cesarean section, both due to the fact that she is a small individual, and that if damage again would happen to this sphincter, it is beyond the hope I think that there would be sufficient tissue again to do a repair.

CASE No. 2

Mrs. E. W. S., aged 49 years, had a complete laceration of the perineum, which occurred at the delivery of her first child 24 years ago.

Her entire history is essentially negative except for a blood pressure of 178/90. The usual preoperative preparation was given, and the patient operated upon under gas anesthesia.

A typical "H" incision was made, and the rectal mucosa sutured with interrupted layers of nylon. Considerable difficulty was encountered in finding the divided edges of the sphincter, as over 24 years a considerable atrophy had taken place. These were identified as well as possible, brought together and tied with two chrome No. 1 figure of eight sutures. The levator muscles were easily identified and brought together in the midline and sutured with three interrupted No. 1 chromic sutures. The vaginal mucosa and skin were closed with interrupted sutures.

As stated before in the paper, considerable difficulty is always encountered after a long period of time, especially when the patient reaches her menopause. May I offer a suggestion at this point that in the future, when these cases are to be attempted, the patient be given a course of vaginal suppositories of stilbestrol over a period of a month, thereby making the tissues much more amenable to operation. For the first time in this case penicillin was used as a postoperative treatment, in the effort to keep down infection, a bugbear in the healing of complete tears.

SUMMARY

The two cases were presented to show the extremes. The statistics, I believe, are an interesting sidelight, particularly to those of us practicing in the deep South. Furthermore, I should again like to emphasize the preliminary use of estrogens vaginally in the older cases at or near the menopause, and also the use of penicillin in the attempt to keep down infection.

PHLEGMONOUS CECITIS

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AND

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Phlegmonous cecitis, definable as a cellulitis beginning submucosal and culminating in a circumscribed or diffuse suppurative inflammation of the cecal wall, is a rare entity. Goldschmidt[1], in 1887, gave the first report of phlegmon of the large intestine. A capable review of the literature by Spivach and Busch[2], in 1943, shows three case references from English written sources and a total of 35 case reports classifiable as phlegmon limited to the cecum.

ETIOLOGY

Etiologically the entity is assumed to be bacterial in origin. Streptococci, staphlococci, bacillus coli and pneumococci alone or in combination are incriminated in limited studies.[3-6] A traumatic entry portal is assumed by some,[5-11] hematogenous infection is suggested by others.[3, 4, 12, 13]

SIGNS AND SYMPTOMS

The clinical manifestations are those of acute appendicitis, characterized by localized pain, fever and emesis. A mass in the cecal region, always tender, varying in motility, is expected. The characteristically early appearance of this mass in the cecal region, within the first 48 hours, should permit a differential diagnosis from appendiceal abscess. Cecal granulomas, volvulus, neoplasia, solitary ulcer, amebiasis and regional enteritis enter into the differential diagnosis.

Hematologic study offers no aid; leukocytosis with neutrophilia is expected.

PATHOLOGY

The pathology has been described as of two types:

1. *Circumscribed:* an irregular oval area of edema and erythema, doughy in consistency, sharply differentiated from adjacent normal cecum and covered with a thin greyish yellow fibrin. There may be central softening due to abscess formation or mucosal ulceration. The peritoneal cavity is relatively free of reactive fluid.

2. *Diffuse:* an edematous involvement blending into the uninvolved cecum, rubbery in consistency, purplish in color with punctuate hemorrhages, and covered by a thick fibrinous exudate.

Bauer[14] simulates the microscopic findings and its type of spread to erysipelas. Collagen-rich exudate is profuse throughout the submucosa with polymorphonuclear leukocytic infiltration; the same reaction to a lesser degree extends to the serosa. Coalescent focal abscesses form a large abscess in the circumscribed type.

DIAGNOSIS

Exploratory laporatomy is essential to the diagnosis, because even at operation the true nature of the condition may not be ascertained, as emphasized by Biedermann.[15] Ileocecal resection was elected in 15 instances and appendectomy, removing an innocuous appendix from the uninvolved portion of the cecum, was performed in 18 patients; all recovered. Exteriorization, resorted to in one case reported, and local excision in two reports, produced three fatalities. The surgical mortality therefore approximates 8 per cent. Since a purposeless appendectomy was done in most patients who recovered, one hesitates to suggest any surgical procedure being indicated, unless specific conditions indicate corrective measures. Spivach and Busch[2] conclude, from the spontaneity with which some diagnosed appendiceal abscesses subside leaving no demonstrable appendiceal complication at subsequent elective appendectomy,[16] that some of such cases may represent instances of phlegmonous cecitis that have completely subsided and the disease is not as uncommon as thought and that in most instances it will subside spontaneously.

Because the issue is controversial and because the diagnosis is rarely made, the indication for isolated case reports exists.

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CASE REPORT

A 56 year old white artisan was admitted to Touro Infirmary July 5, 1945, with acute abdominal manifestations of 18 hours' duration. Pain was colicky, localized in the right lower quadrant; there was associated nausea and emesis. There was no bowel abnormality. The patient had been previously under observation for toxic labyrnthitis; gastrointestinal studies incidental to his examination showed normal ileocecal roentgenologic findings. There was no history of previous abdominal operation.

The outstanding physical findings were fever 99.4°, a movable, acutely tender mass in the cecal region, rebound tenderness localized in the cecal region. Rectal examination was normal.

Urinalysis revealed normal findings. The leukocyte count was 15,750 with 98 per cent neutrophiles.

Operation was elected with a preoperative diagnosis of appendicitis or cecal volvulus. An exploratory operation was done by Dr. James Rives. The appendix and adjacent cecum were normal; the remainder of the cecum was intensely congested and purplish red in color, edematous and of almost rubbery consistency, covered by fibrinous exudate extending into the right peritoneal gutter with fresh filmy fibrous adhesions extending to the lateral abdominal wall. There was minimal peritoneal reactive fluid. Manipulation caused apparent accentuation and extension of the involvement. The picture suggested a retrocecal abscess; extensive cecal mobilization, and exploration revealed no abnormality. An appendectomy was performed.

Penicillin was administered for 72 hours; the patient had an uneventful afebrile convalescence with disappearance of the palpable cecum in four days.

The innocuous appendix removed, incidental to the exploratory, was reported pathologically normal. Stool examination, cultures and febrile agglutinations were all negative. The patient has been enteric asymptomatic since.

COMMENT

In retrospect a diagnostic impression of diffuse phlegmonous cecitis is made. We are not enthusiastically claiming this is a certain instance of the described entity, for the disease *per se* seems to rest on an unstable footing and confirmatory biopsy of the cecum could hardly be justified. Many cases simulating the so-called phlegmonous cecitis can be recalled by the thoughtful clinician but in most instances a more satisfactory diagnosis was eventually made. Our object is to focus attention on the possibility of such a disease state of the cecum that recognition and more satisfactory evaluation may be made. Unquestionably many of the episodes of unoperated "appendicitis" represent a form of cecitis. We are inclined to feel penicillin was definitely advantageous in our case, for the recovery period was much briefer than in recent reports.

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INJURIES TO THE SHOULDER*

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Injuries to the shoulder often may lead to a great deal of difficulty in making a differential diagnosis. The closely related nerve and musculoskeletal structures in the cervical spine and shoulder give rise to referred pain and indirect trigger points of soreness that are common to any one of several pathologic processes. The more con-

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TABLE 1

DIFFERENTIAL DIAGNOSES

SHOULDER INJURIES	PAIN	TENDERNESS	SWELLING	LIMITED MOTION	ATROPHY	NEUROLOGIC SIGNS	SYSTEMIC	X-RAY
1. Cervical Region 1. Osteoarthritis and trauma	On motion of neck referred to arm	Cervical not shoulder	None	Limited in neck, not in shoulder	None	May be radicular reflex type	May be foci or toxic sources	Local lipping vertebral margins
2. Herniated disk	Local and referred arm-hand	Localized 5-6-7 cervical	None	Wry neck, muscle spasm	Shoulder muscles	Loss reflex, numbness, paresthesia finger-thumb	None	Cervical curve straightened narrow disk
3. Scalenus anticus	Referred to arm-hand	Base neck-1st rib	Hand	None	Forearm, hand	Trophic vasomotor changes reflexes normal	Postural faults, fatigue, occupation strain	Negative
4. Cervical rib	Referred to arm-hand	Base neck-1st rib	Hand	None	Forearm, hand	Trophic vasomotor changes reflexes normal	None	Cervical rib
5. Cardiovascular	Substernal left side	Sensitive points	None	None	None	May be vasomotor changes	Cardiovascular changes	Negative
6. Peripheral vascular	Referred arm-indef.	Indefinite	Hand-fingers	None	None	Trophic vaso-motor changes, gangrene	Heart-blood vessel changes	Negative
7. Cervico-brachial neuritis	Brachial plexus	Directly along nerves	Mild to severe	Due to pain	Trophic along nerve course	Hyperesthesia, causalgia	Foci or toxic symptoms	Negative
8. Neurosis	No definite pattern	Inconsistent	None	Voluntary	None	No changes	Emotional factors	Negative
11. Rheumatic 1. Periarthritis "Frozen shoulder"	Severe to mild	Periarticular	Moderate severe	Loss of abduction and rotation	Severe shoulder	No changes	Foci infection. High sed. rate	Bone atrophy shoulder structures

2. Bursitis-tendonitis	On 70-120° abduction	Definite over bursa	Tip of shoulder	Loss of abduction	Abductors of shoulder	None	None	Negative for calcareous deposits
3. Rheumatoid	On any motion of shoulder	About joint	Synovitis or swelling of shoulder	Motion limited all directions	General from disuse	None	Those common to rhematoid disease	Atrophy joint space
4. Myofasciitis-wry neck	Neck sub-occipital	Trapezius other neck muscles	None	None	None	None	Foci infection, allergy	Negative or mild osteo-arthritis
5. Osteoarthritis shoulder	On active motion more than passive	Peri-articular	None	Mild to severe with crepitus	Shoulder, arm	None	May be foci or toxic sources	Osteophytes eroded, narrowed joint
6. Specific arthritis	Local to shoulder	Local to shoulder	Shoulder joint	Because of pain and swelling	In chronic cases	None	Positive laboratory tests	Destruction of joint
7. New growth	Referred or local over tumor	Over tumor	Point of tumor	Mechanical from tumor	Little or none	None	None except malignancy	Evidence of new growth
III. Capsule and Tendon 1. Supraspinatus rupture	On abduction of shoulder	Over tuberosity	Local over tuberosity	Inability to initiate abduction	Deltoid moderate	None	None	Negative
2. Long head biceps	Rupture sharp, sudden	Over tendon	Local bulging muscle belly	Little or none	Little or none	None	Often background of periarthritis	Negative
3. Bone and joint fractures-dislocation	Local	Local, direct and indirect	Local deformity ecchymosis and swelling	Due to pain and muscle spasm	Deltoid in old cases	Nerve injury complications	None	Fracture or dislocation pathology

fusing cases are those which arise through strain, over-activity and repeated minor trauma. Systemic sources of focal infection, toxic or metabolic disorders may further complicate the diagnosis.

Shoulder conditions, for the purpose of differential diagnosis may be classified as follows:

I. Cervical region, referred pain
  1. Osteo-arthritis and trauma
  2. Herniated intervertebral disk
  3. Scalenus anticus syndrome
  4. Cervical rib
  5. Cardiovascular disease
  6. Peripheral vascular disease
  7. Cervicobrachial neuritis
  8. Neurosis
  9. Brachial plexus injuries.
II. Rheumatic
  1. Periarthritis "frozen shoulder"
  2. Bursitis or tendonitis
  3. Rheumatoid disease
  4. Myofasciitis, wry-neck
  5. Osteoarthritis, shoulder joint
  6. Specific arthritis
  7. New growth.
III. Capsule and tendon injuries
  1. Rupture of the supraspinatus tendon
  2. Rupture of the long head of the biceps.
IV. Bone and joint injuries
  1. Fractures and dislocations of the clavicle
  2. Fractures of the scapula
  3. Fractures of the greater tuberosity
  4. Fractures of the neck of the humerus
  5. Dislocation and fracture dislocations of the shoulder.

OSTEOARTHRITIS OF CERVICAL SPINE

Pain, referred from the cervical region to the shoulder and arm, may be due to local impingement of the nerve root fibers. This may be the result of local injury to the cervical joints or may result from marginal degenerative changes of the vertebra with osteoarthritic manifestations. In such cases, there is stiffness and pain on forced neck motion while examination of the shoulder joint proves essentially negative. The x-ray reveals the pathology in the cervical spine. The treatment is that of rest, traction and support. Local nerve block may give relief in some cases. When the nerve root pain is intractible and not relieved by conservative methods, surgical decompression may be necessary.

HERNIATED INTERVERTEBRAL DISK

Herniated intervertebral disk is a more frequent cause of pain referred to the shoulder and arm than commonly realized. The sixth and seventh, and seventh and first thoracic interspaces are the more frequently involved. The symptoms are those of nerve root involvement and are quite characteristic. Muscle spasm and wry-neck is often severe. Coughing or sneezing may provoke referred pain. Unequal pupils and Horner's syndrome may be present. When the lesion is between the seventh cervical and the first thoracic vertebrae, there may be numbness of the thumb and index finger. When between the sixth and seventh cervical vertebrae, the reflex of the triceps may be dull or absent. The x-ray may show a straightening out of the normal curve of the neck. There may be also a narrowed intervertebral disk with osteoarthritic changes. The treatment of an extruded herniated disk is that of excision. Conservative treatment of bed rest with weight traction may be very effective in early cases and should always be tried before resorting to operation.

SCALENUS ANTICUS SYNDROME

The scalenus anticus syndrome occurs as a result of the vulnerable position of the subclavian artery and brachial plexus in relation to the scalenus muscle and its attachment to the first rib. The subclavian artery and brachial plexus may become compressed or irritated and cause pain referred to the shoulder and arm together with vasomotor disturbances. Unlike periarthritis of the shoulder, the joint motion is free and there is no local tenderness. Tenderness and increased pain may result from pressure at the attachment of the scalenus anticus to the first rib. Flexing the head toward the affected side increases the pain. The exciting factors may be faulty posture, fatigue, repeated trauma, rheumatic fibrositis and wry-neck.

Treatment should consist of conservative measures before resorting to surgery. Physical therapy, rest in a sling or bedside arm traction with bed rest may give relief slowly. Special positions of sleeping to relax the muscles of the affected side have been recommended. Novocaine injections are sometimes very effective. Surgical tenotomy of the scalenus anticus at its junction with the rib gives spectacular relief to persistently chronic cases.

CERVICAL RIB

The symptoms of cervical rib are the same as the scalenus anticus syndrome. The x-ray may show various types of cervical ribs. Some are very long and may include a joint in the abnormal rib. The rib need not be removed. In most cases, tenotomy of the scalenus anticus gives prompt relief. Removal of the rib is a serious operation.

VISCERAL CONDITIONS

Certain visceral conditions may cause referred pain to the shoulder and arm, the more serious of which are coronary sclerosis and angina pectoris. Disability to the shoulder may precede or follow the heart attack. A superimposed periarthritis of the shoulder with the history of over-use of the arm may mask the more important heart symptoms. Protection and splinting of the shoulder will relieve the local pain but not that of cardiac origin. Investigation of the cardiovascular system usually determines the diagnosis.

Peripheral vascular disease may be associated with shoulder injuries. In such cases the local circulatory signs predominate the picture and the treatment should be directed accordingly.

CERVICOBRACHIAL NEURITIS

Cervicobrachial neuritis is commonly present in rheumatic fibrositis of the shoulder. When the neural sheaths or interstitial tissues of, the nerve are involved the pattern of tenderness extends directly along the course of the nerves involved. Other tissues of the shoulder are affected and the neuritis, therefore, is only a part of the local rheumatic symptoms about the musculoskeletal tissue of the shoulder. The pain may be excruciating and treatment may exhaust all therapeutic resources before relief is attained. The treatment is directed toward curing the rheumatic fibrositis. Fever treatment in which a temperature of 99 to 100° is maintained for three hours twice weekly for four or five treatments is very effective.

NEUROSIS

Neurosis, with pain in the shoulder, may follow injury. Usually when a claim is in the background emotional signs will predominate. Local signs of stiffness are lacking. There is likely to be exaggerated and irregular complaints. The pain follows no typical pattern. Atrophy of the deltoid and other muscles may be present when there is evidence of long continued disease. The best treatment in such cases is early settlement of any impending claim.

BRACHIAL PLEXUS INJURIES

Brachial plexus injuries more frequently occur as a complication to dislocation of the shoulder. Direct wounds such as from missiles or stab wounds require prompt exploration and repair. Contusions and injuries from traction or compression of the nerves will often fully recover with appropriate immobilization. Open surgical repair of brachial nerve injuries requires special technic and a full knowledge of pathology.

PERIARTHRITIS

Periarthritis of the shoulder may be of a mild or severe form. It is characterized by pain referred from the shoulder down the arm and limitation of abduction and rotation. It does not completely limit glenohumeral movement as is true of rheumatoid arthritis. It usually develops insidiously. If the history is carefully elicited, there usually can be found an incidence of over-use or strain. An acute injury will often times bring about the first severe symptoms of pain because the stiffness from adhesions is already present but has not been noticed.

The changes about the shoulder are the

same as found in fibrositis elsewhere. The condition is often diagnosed and treated as neuritis with little realization of the prolonged stiffness that is due to exist. The treatment often requires heroic effort to relieve pain. Complete rest in bed with local hot packs used and side arm traction of six to ten pounds is the more effective remedy. When the acute pain is lessened and the inflammatory stage has subsided, physical therapy with active exercise is used to increase motion. Passive motion and forceful manipulation that causes pain is definitely harmful. The patient, himself, on the contrary, must use all the voluntary forceful exercises in abduction and rotation that he can be persuaded to do. The patient must be assured that he will eventually recover usefulness of his shoulder. It may require as long as one to two years, depending upon his effort in his own behalf. Forceful manipulation under anesthetic is seldom indicated and may do a great deal of harm. Analgesic injections of procaine may be used to relieve acute pain and muscle spasm.

BURSITIS

Bursitis of the shoulder involves the subdeltoid or subacromial bursa. Tendonitis of the shoulder involves the long head of the biceps or the tendons of the supraspinatus, infraspinatus, subscapularis and teres minor which attach to the tuberosity of the humerus.

The anatomy of the shoulder is unique. The subdeltoid bursa lies between the deltoid muscle and the capsule of the shoulder joint formed by the supraspinatus and conjoined tendons. With every movement of abduction, the supraspinatus tendons ride along the acromion process. The subdeltoid bursa is to minimize this friction. When strain, overactivity or frequent trauma occurs, degenerative processes predisposes to calcification of the tendon. Bursitis may suddenly occur in the acute form or gradually appear as a subacute soreness or chronic disabling pain. The characteristic symptoms of subdeltoid bursitis is tenderness over the bursa that disappears on full abduction. Another differentiation is that pain on abduction is more marked through a range of motion from about 60 to 120° but less painful up to or beyond this range.

Where adhesions are formed, the pain will not be severe until about 60° of abduction but severely painful throughout further abduction. Bursitis and tendonitis may also involve the long head of the biceps. This tendon may rupture spontaneously. The characteristic symptoms are those of pain when the patient supinates the forearm or flexes the elbow against resistance.

The x-ray will often show calcareous deposits in the region of the bursa. The shoulder should be x-rayed from at least three positions in making a search for calcareous deposits.

Treatment consists in providing early relief of pain. Injection of 10 to 20 c.c. of 1 per cent procaine into the area will provide painless motion in which, sometimes, mild adhesions may be overcome. The bursa may be aspirated with good results. The calcareous deposits usually consist of a chalky liquid which, in time, will absorb without treatment. Excision of the bursa or calcareous deposit is seldom necessary. In the more severe cases of chronic bursitis and tendonitis or osteoarthritis the outer end of the clavicle may be excised.

RHEUMATOID ARTHRITIS

Rheumatoid arthritis of the shoulder is but one manifestation of a systemic disease. Other joints are involved as well as the shoulder. The limited motion of the joint is about the same degree in all motion whereas in periarthritis and bursitis flexion and extension are only moderately limited compared with abduction and rotation. The treatment is essentially systemic.

MYOFASCIITIS — WRY-NECK

Myofasciitis is a form of rheumatic fibrositis and is probably the most frequent cause of pain in the soft tissues about the neck and shoulder. The trapezius muscle is more commonly involved but any muscle or group of muscles may be involved. When the scaleni are involved, the pain in the shoulder and arm may be the same as that produced in the chronic scalenus syndrome. The characteristic symptoms are pain and tenderness in multiple muscle groups of the neck, painful fibrous nodules in the suboccipital region and along the border of the trapezius and muscle spasm producing diffuse muscle soreness and wry-neck. The treatment is that of elimination and other systemic measures.

OSTEOARTHRITIS

Osteoarthritic changes about the shoulder do not ordinarily cause much pain or disability. Bony proliferation may occur about the border of the glenoid and acromioclavicular junction. Such manifestations may appear together with marked crepitus and creaking of the joint. The characteristic feature of this condition is that of pain on activity but little or no pain on rest or passive motion. The pain is entirely local, There is often much annoyance of being aware of crepitus. The treatment is rest and measures for improving nutrition to the local tissues.

SPECIFIC ARTHRITIS

Specific arthritis of the shoulder is of no different character than in specific infection of any other joint in respect to diagnosis and treatment. Tuberculosis of the shoulder in children presents, perhaps, one of the most difficult of shoulder problems.

NEW GROWTH

Tumors of the shoulder are more frequently recognized through x-ray examination. An exostosis on the axillary aspect of the upper end of the humerus may produce peripheral nerve paralysis. Giant cell sarcoma is found occasionally. Malignant tumors may require amputation of the entire shoulder girdle.

RUPTURE OF SUPRASPINATUS TENDON

Rupture of the supraspinatus tendon may be complete or incomplete. There is usually a predisposition of a tendonitis of a degenerative nature. A definite injury, such as a fall or strain, brings about the rupture in the already weakened tendon. The function of the supraspinatus is to anchor the head of the humerus to the glenoid to provide a fulcrum from which the deltoid can gain its leverage action on the arm.

Therefore, the characteristic symptoms are inability to start the movement of arm abduction. To test for this sign, the elbow should be flexed and the forearm held against the body. If the patient struggles in the effort to abduct the arm but instead only raises the whole shoulder and if there is a free passive motion to the shoulder, the supraspinatus is likely ruptured. Such attempts at movement are painful and there is a definite point of tenderness over the tip of the shoulder. The treatment of choice is surgical repair of the torn tendon. There is no way to determine the extent of rupture. Even in the incomplete cases the disability may be prolonged without surgery. If surgery is objectionable, an adduction splint may be worn for four to six weeks.

RUPTURE OF LONG HEAD OF BICEPS

Rupture of the biceps tendon may be spontaneous or may be from a trivial muscular effort. It usually is preceded by degenerative changes or periarthritis. There is a history of sharp sudden pain followed by obvious bulging of the relaxed muscle belly and loss of power. Repair consists of restoring tension by suturing the distal end of the tendon to the bicipital groove of the humerus.

FRACTURE OF THE CLAVICLE

Fracture of the clavicle is more likely to be disabling because of the severity of immobilization methods, than from the broken bone or the result of mal-union. In very small children the fracture is often overlooked but leaves no ill effect from lack of treatment. In older children and in adults, the treatment should be one which leaves free motion to the arm and fingers. Overriding of the fragments with the presence of a more or less lump at the site of the fracture will not lead to disability, and nonunion is rare. If it is necessary to avoid any deformity at the point of the fracture, such as in young women, it is best to institute complete bed rest in bed on the back for three to four weeks with a pillow between the shoulder blades. The more practical treatment for young children is that of the figure of eight bandage. Padded stockinette or an Ace bandage are preferable but the cotton padding and roller bandage will do. The bandage is applied in the form of a figure eight, passing in front of the shoulders under the axilla and crossing behind the shoulders. A more substantial dressing is the Billington yoke, in which a figure of eight plaster bandage is supplied.

The patient must be cautioned to keep his arms abducted to prevent the discomfort and perhaps numbness from pressure. Open operation should be avoided almost at all hazards. Sharp points of bone that cannot be reduced may be excised later if they fail to absorb.

DISLOCATION OF THE ACROMIOCLAVICULAR JOINT

Dislocation of the acromioclavicular joint may involve only the acromioclavicular joint or may include rupture of the coracoid clavicular ligaments. It is very important to recognize and promptly treat these conditions. The x-ray should be taken in the standing position. In the former case there is only a moderate displacement. The end of the clavicle may be held in position by a padded adhesive strap carried over the shoulder at the base of the neck and under the flexed elbow to pull the weight of the arm upward against the clavicle. In the more severe cases where the coracoid ligaments are torn and the deformity of the tip of the shoulder is quite obvious, open repair is preferable. The ligaments, together with the periosteum which is found stripped from the outer end of the clavicle, can be accurately repaired in the early cases. In the late cases, fascial transplant ligatures may be necessary. Fixation may be obtained by a screw lengthwise into the acromion or vertically from the acromion into the coracoid process.

FRACTURES OF THE SCAPULA

Fractures of the scapula occur either in the body or neck of the bone. Fracture of the body does not cause much disability even when severely comminuted because the bone is very thin and is completely surrounded by thick muscle tissue and fascia. Immobilization for two weeks in a sling is usually all that is necessary.

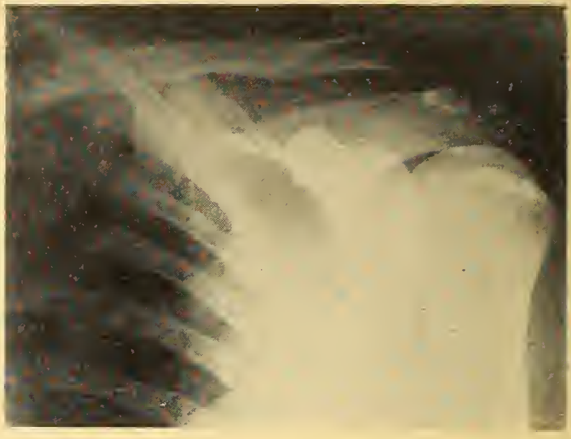

Fig. 1. X-ray standing, shows separation of acromioclavicular junction.

Fracture of the neck of the scapula is important because it may be overlooked following a fall on the shoulder. The displacement of fragments is not so important as the development of adhesions and periarthritic sympotms. In younger persons, the fracture should be accurately reduced. In those over fifty years of age, a moderate amount of displacement is not so disabling as that of stiffness resulting from overtreatment. Bedside traction is the preferable form of treatment. Casts and abduction splints must not be left on over two weeks.

FRACTURE OF TUBEROSITIES OF THE HUMERUS

Fractures of the tuberosities of the humerus may be of the more severely fragmented type or that of a slight chip fracture. In the former, if displacement is slight, early active motion to prevent adhesions and stiffness can be carried out in most cases. The hanging cast treatment or ordinary sling is usually ample treatment. Where the fragment of the tuberosity is retracted up into the joint with the supraspinatus, the symptoms are the same as that of rupture of the supraspinatus. Accurate reposition should be secured. This, however, can be accomplished usually without open surgery. Weight traction with the arm fully abducted 90° and somewhat externally rotated and flexed in the "salute" position is the best treatment. A plaster spica may be used but a resulting stiffness is greater. Strick immobilization in abduction should be maintained for three weeks. Active motion of abduction may be permitted in six weeks.

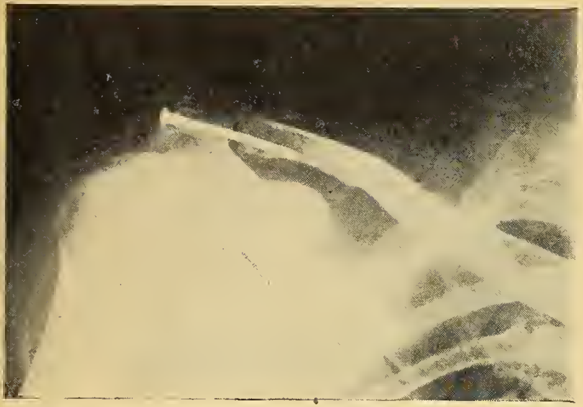

Fig. 2. Shows screw fixation after open reduction.

FRACTURES OF THE NECK OF THE HUMERUS

Fractures of the neck of the humerus have been, in the past, of serious consequence chiefly because the methods of treatment were a worse hazard toward disability than the fracture itself. The hanging cast treatment has greatly eliminated many of the undesired complications that used to occur from over-enthusiastic treatment. The attitude toward reduction and splinting is different in children than in adults and different in young adults and senile adults. In children possible injuries to the epiphysis must be considered before attempting open reduction. A certain amount of deformity will be reduced by growth. In young adults more accurate reduction is required even if it means open reduction. In more aged persons a hanging cast is all the splinting necessary.

There are two general types of fracture of the surgical neck of the humerus: (1) the abduction type; (2) the adduction type.

In the abduction type, the shaft is abducted, the head is rotated outward and the fracture has an inward angulation. The adduction type is just the opposite. The abduction fractures are more common. In the more severely comminuted cases, where the head is crushed, rotated and the shaft impacted into it, open reduction will be necessary for accurate alignment. Where there is no impaction the pull of the muscles may cause severe deformity unless the fragments can be engaged sufficiently firm to prevent rotation of the head and pressure of the shaft into the axilla. Such a fracture must not be placed in an abduction splint or cast without adequate traction.

The adduction type of fracture produces an outward angulation. In severe displacement, the motion of abduction may be permanently limited due to the angulation unless reduced. Traction with the arm in abduction is usually indicated except in the more aged where the hanging cast is adequate.

DISLOCATION OF THE SHOULDER JOINT

Dislocation of the head of the humerus is serious because of the possibility of habitual dislocation and because of possible nerve injury, the more common of which is injury to the circumflex nerve of the deltoid muscle. Caution should be used in determining other complications such as rupture of the supraspinatus tendon with or without fracture of the tuberosity. In such cases, if the arm is immobilized at the side instead of in abduction, the results of such complications may be very difficult to repair later. In fracture dislocations closed reduction is often impossible. Open reduction should be prompt to prevent pressure symptoms.

Habitual dislocation is common in athletes and many surgical procedures for its prevention have been devised. The more popular technic is that of the Nicola operation. The experience gained in the recent war has shown that recurrence is more frequent where full activity of the joint is demanded as in military service. Bankhart has very successfully demonstrated the pathology as it usually exists and has devised an operation to repair the defects in the capsule and rim of the glenoid.

SUMMARY

Injuries to the shoulder present many perplexing difficulties in respect to diagnosis. Treatment is likely to be seriously misdirected if based on the wrong diagnosis. A thorough knowledge of all conditions leading to shoulder pain and disability is imperative if responsibilities for treatment are to be assumed.

IMPENDING ISCHEMIC GANGRENE NEW NON-SURGICAL THERAPEUTIC SUGGESTIONS*

(A PRELIMINARY REPORT)

ROBERT A. KATZ, M. D.†
NEW ORLEANS

"MOTHER NATURE IS A GREAT HEALER — A GREATER HEALER WHEN WE LEARN HER HIDDEN SECRETS."

Anonymous.

This is a report on the use of a commonplace gas, diethyl oxide in the treatment of impending ischemic gangrene with pain. This useful agent, which has done so much to relieve pain since its introduction by Morton[1] in 1846, is now celebrating its hundredth anniversary as a boon to surgery.

I have chosen the chemical name because of the adverse psychological effect produced in patients by the mere mention of the term ether.

A series of over sixty patients have been treated with good results. This method was adopted after previous failures to relieve threatening gangrene and pain by the accepted physical, medical and surgical measures. Drugs tried and discarded were: nitrites, magnesium and calcium salts, papaverine hydrochloride, nicotinic acid, prostigmine methyl sulphate, histamine diphosphate, and lastly novacaine sympathetic block. The outlook for the senile arteriosclerotic and diabetic patient appeared unpromising.

Such men as Moschowitz,[2] in his monograph on vascular sclerosis, have represented the current thought as to the therapy in arteriosclerosis. "Arteriosclerosis being an inevitable consequence of ageing and therefore an irreversible process, it is hardly likely that any method of therapy will ever be discovered which will restore the diseased vessels to their normal texture, unless we can cure mortality. Nor can arteriosclerosis be prevented, no more than gray hair or facial wrinkles."

This observation may be entirely correct; nevertheless, those of us who are concerned with the clinical burdens of these ever-present patients have still to face a solution for the paramount complaints of pain and ischemia. A new non-surgical approach has been worked out, the details of which are now set forth.

INITIAL EXPERIMENTAL WORK

In March of 1945, a patient was referred to me with a complaint of discoloration and excruciating pain of the left index, middle and ring fingers. This patient had an absent subclavian, brachial and radial pulse. It was thought that the pathology was due probably to thrombosis of the subclavian artery. While in the hospital, this patient received histamine diphosphate, subcutaneously and intravenously, papaverine hydrocloride, subcutaneously; stellate block, pavex, alternating hyperemia and demerol and codeine in usual clinical doses. None of these measures gave him relief. He spent most of his time busily stroking his painful hand.

In desperation, I decided to try the effect of diethyl oxide intramuscularly. My decision was based on the flush reaction achieved during the induction stage in anesthesia. Using myself as a preliminary clinical animal, I injected into the muscle of my thigh 1 c.c. of diethyl oxide intramuscularly. Only those who have experienced pain could appreciate the sensation I suffered. This injection produced super pain. After emitting a series of my choicest unholy expletives, I detected, instead of brimstone, the taste and smell of diethyl oxide.

On the following evening, I decided to experiment with a mixture of 50 per cent diethyl oxide and 50 per cent peanut oil. (This was obtained from a kind lady in the delicatessen business who had some left from Passover). I thought that an oil in diethyl oxide mixture might be less irritating and have a more prolonged activity on injection. Prolonged activity of the mixture was confirmed, but the pain persisted. At this point I tried infiltrating the area with procaine, but this did not achieve the desired effect. I then consulted my pharmacology books and found that benzocaine, a local anesthetic commonly used as a dusting powder, was soluble in diethyl oxide. Since benzocaine appeared to have a low margin of toxicity, I began another series of *in vivo* experiments to find a suitable concentration that would alleviate the pain of injection. I started with a 1 per cent solution and finally achieved success by using a 10 per cent solution of benzocaine incorporated in the peanut oil-diethyl oxide combination. Penicillin was added to sterilize the combined drug.

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*Read before the Scientific Meeting of the Orleans Parish Medical Society, February 11, 1946.

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The solution finally adopted was composed of 50 per cent diethyl oxide and 50 per cent peanut oil plus ten per cent benzocaine by weight. Complete anesthesia was effected in from two to four seconds. After four 5 c.c. injections on myself, I noticed a feeling of warmth, which came on after 35 to 40 minutes, and a rise of blood pressure. The pressure rose 25 mm. and lasted for about 90 minutes. This was followed by a drop below my normal blood pressure level. Diethyl oxide could be detected on the breath for 15 hours.

Satisfied with results, I looked up the literature on the intramuscular use of diethyl oxide and found several interesting references dating back to 1912. Intramuscular injections, as a means of anesthesia, had a short-lived trial in France where it was advocated for operations upon the mouth and head.[3] The dose administered was empirically arrived at as 1 c.c. of diethyl oxide per kilogram body weight. Several fatalities were reported with doses from 30 to 80 c.c. In one case epileptiform seizures preceded death. Since I had survived a total dose of 10 c.c. of diethyl oxide several times, I decided that this would henceforth constitute my maximum clinical dose at any one time.

CLINICAL TRIAL IN 34 CASES BY INTRAMUSCULAR METHOD

Methods: The preparation of the therapeutic solution was standardized, on the basis of my findings, as a solution compounded of 50 per cent diethyl oxide, 50 per cent peanut oil and 10 per cent benzocaine, with the addition of 100,000 units of penicillin to make up 100 c.c. of the combined drugs. The maximum dose was 20 c.c., equivalent to 10 c.c. of diethyl oxide. It was administered in the outer quadrant of the buttocks. Special care was taken to prevent oozing of the material by applying pressure over the point of injection.

Results: The first clinical trial was made on a patient with impending gangrene of the left index, middle and ring fingers. This patient was in a severely demoralized state as a result of the continual loss of rest due to his unending suffering which could not be relieved by large doses of codeine and morphine. The intramuscular injection of 20 c.c. of diethyl oxide-peanut oil solution produced rather startling effects, and the patient now was released from the acute agonizing pain. He did experience a mild sort of throbbing pain, localized in the area of active inflammation, which he could bear easily.

The second patient was a diabetic, 75 years old, who had previously had his right leg amputated because of diabetic gangrene. Two months after his release from the hospital, his left foot became involved with the same process and pain, edema and ischemia were pronounced. After several injections, the acute pain disappeared and the patient remained comfortable for four months. As a result of the initial success of this discovery, work was begun on assembling a suitable series of cases to obtain pertinent data on the rapidity of the solution's entry into the blood stream, blood chemistry changes, safety of the method, approximate dosage, efficiency and rapidity of relief of ischemia and pain, actual subjective and objective proof of improvement, length of apparent improvement, effect on blood pressure and pulse rate.

Following out this work over the past year, I have had the good fortune of having the co-operation and valuable help of Dr. Rudolph Matas. Dr. Matas saw patients one and two in consultation and has kept up with the progress of the work. His experience and wisdom and encouragement have been inspiring.

The past year has seen the fulfillment of the study as set forth above, and the data is complied as follows: Rapidity of the solution's entry into the blood stream is illustrated by the fact that diethyl oxide could be smelled on the breath in eight to 20 seconds. Frequently, the patients have been startled by the sudden taste and smell of the material. To overcome these side reactions, patients have been given wintergreen or spearmint tablets. This, incidentally, is of importance since generally patients are otherwise ostracized from their acquaintances.

Careful estimation of nonprotein nitrogen levels revealed no evidence of elevation after the drug was administered; cholesterol values in this series of patients was also unchanged, but it is interesting to note a tendency toward high levels before treatment. P. S. P. determination revealed no decrease in renal efficiency. Red blood cells count and hemoglobin values were unchanged. Urinalysis revealed no evidence of hematuria or albuminuria, and bromsulfalein tests of liver function were negative. Sodium levels appeared to be elevated before the administration of the drug and were not affected by its further use. The significance of the latter remains to be studied at a future date.

The safety factor, in this series of 34 cases, represented a record of no fatalities or invalidism as a result of treatment. Possible untoward reactions, due to oil embolism, with this method could be expected if extreme care were not taken to avoid injection of this material intravenously.

The optimum dosage for the group was established empirically at 10 c.c. of diethyl oxide. The usual dosage for private patients was established at 20 c.c. of diethyl oxide and peanut oil intramuscularly daily, an equivalent of 10 c.c. of diethyl oxide. A total of 12 injections were given. The patients seen in the out-patient clinic of the Touro Infirmary were given a dosage of 12 c.c. of diethyl oxide and peanut oil twice weekly. Strangely enough, both series of patients did equally well except that the private patients finished their course earlier.

A summary of the results of the efficiency of this drug in relieving the pain and ischemia is given in table 1.

TABLE 1
RESULTS OF INTRAMUSCULAR INJECTIONS OF DIETHYL OXIDE AND PEANUT OIL IN THE RELIEF OF ISCHEMIA AND PAIN IN 34 CASES

	Good	Fair	Poor
Diabetic ischemic limb	16	7	
Arteriosclerotic ischemic limb	6		3
Arterial thrombosis of subclavian artery	1		
Buerger's disease	1		
Total number of patients	24	7	3

It will be noted that, out of 23 diabetic patients, only seven failed to receive more than a fair amount of relief. This failure was due in part to complications which prevented their receiving adequate dosage. The same was true in cases of arteriosclerotic limbs. Relief of the acute symptoms of numbness, tingling, burning sensation of the toes, night pain and cramps was, in most cases, quite definite after the second day.

Subjectively and objectively the reactions of the patients were prompt and rather startling. Those who experienced severe muscular pain due to ischemia were relieved and were able to walk up to a distance of one-quarter mile without evidence of claudication. This was made possible by the increase in circulatory nourishment to the formally involved muscle masses. It is worthy to note that pain is usually manifested to its greatest severity during muscular contraction when there is a great demand for blood. Diethyl oxide has served admirably in augmenting the supply of blood to the affected part. There was an improvement in the sense of well-being. Objectively, there was a general increase in warmth over the whole body. The skin color improved from a cyanotic hue to that more nearly resembling the normal skin tint.

LENGTH OF IMPROVEMENT

A noteworthy observation on the length of apparent improvement after the last treatment reveals that the effect of the diethyl oxide is lasting. It has maintained its relief of symptoms for various periods up to one year. Table 2 gives the length of time the various patients have been without treatment.

TABLE 2

ELAPSED TIME IN MONTHS SINCE LAST DIETHYL OXIDE AND OIL INJECTIONS

	1-5 Mo.	5-7 Mo.	7-9 Mo.	9-11 Mo.
Diabetic ischemic limb	9	10	3	1
Arteriosclerotic ischemic limb	2	3	3	1
Buerger's disease				1
Arterial thrombosis subclavian artery			1	
Total number of patients	11	13	7	3

An interesting sidelight is the patient with Buerger's disease who is now well after nine months and who still smokes from one to three packages of cigarettes a day. Initially, the blood pressure appears to be elevated from one half hour to one hour, and the pulse is slightly accelerated. The average rise is from 15 mm. to 25 mm. of mercury. After this the blood pressure frequently falls from 10 to 30 points below normal. In some hypertensive patients, a notable, but not overwhelming hypotensive effect has been obtained from injection.

COMPLICATIONS

The first patient treated developed a large serous blister after his seventh injection. It was thought that the oozing out of the diethyl oxide and oil caused a burn. Subsequently, longer needles with Huber points were used, and the area was covered with hard petroleum jelly. Out of the first 34 cases, six ulcers developed. The ulcers extended below the skin and deep into the muscle layer. This disturbing complication in 18 per cent of the patients caused the work to be stopped until a safer method could be found. Other unfavorable reactions at the point of injection were hard indurated areas and a sensation of numbness that persisted for months because of the insoluble nature of the deposited benzocaine. As a result of these reactions, I decided that a safer method had to be achieved and abandoned the intramuscular method.

CLINICAL TRIAL IN 26 CASES BY THE INTRAVENOUS METHOD

After a careful study of the problem, I decided to administer diethyl oxide intravenously. Honan[4], in 1913, established the safety of diethyl oxide. He administered it intravenously to establish anesthesia in 350 cases with a fatality record of one, and this one fatality was due to another agent, not diethyl oxide.

Honan used a mixture of saline and diethyl oxide in a concentration strength of from 5 to 7½ per cent. These figures are important in that they cover a large number of cases; however, the objective here was anesthesia.

Beck,[5] in 1945, used diethyl oxide in the United States Army for intravenous anesthesia, in operations involving the thorax, with a record of no fatalities and no complications. He used 10 per cent solution of diethyl oxide and saline.

I prepared a solution containing 10 c.c. of diethyl oxide in 90 c.c. of saline. Since diethyl oxide has a specific gravity of 0.718 gram, a mixture with the heavier saline solution is ideal. The completed 100 c.c. ampoule is vigorously shaken and put into the refrigerator under a temperature of 45° F. Before using, it is shaken again and administered intravenously. This is equivalent to 10 c.c. of diethyl oxide and 90 c.c. of saline.

Methods: The vein is first secured with a syringe, using a 19 gauge needle; the syringe is then removed. The diethyl oxide saline solution is now connected to the needle. This is important as diethyl oxide in the tissues is extremely painful. The first 10 c.c. should be run in slowly because there is a slight transitory burning sensation. The rest of the ampoule may be administered in from 15 to 25 minutes. Diethyl oxide odor may be detected on the breath up to 15 hours.

It is well to be sure that the patient has not eaten just before the injection is begun as emesis may occasionally occur. Other side effects are drowsiness and a tendency to excitement. The intravenous drip should be discontinued if any of the above symptoms occur.

Results: As before, 26 patients presenting the symptoms of ischemic gangrene with pain were treated by the intravenous method. Again the same data were assembled. Detection of diethyl oxide on the breath was prompt—never over 10 seconds. There were no serious untoward reactions except a vigorous emesis in an emotionally unstable patient who had forgottent to report that she had just eaten. As noted above, the dosage was 10 c.c. of diethyl oxide and 90 c.c. of normal saline. All but eight patients in this series were diabetics in the age group between 55 and 84.

The first patient treated was a 76 year old male diabetic who had the beginning stigma of moist gangrene. He had been treated by the intramuscular route, but this was discontinued four months previously due to formation of deep muscle ulcers. The foot was discolored and painful. Large bullous blisters were present on the big toe and on the ball of the foot. Edema on the dorsum was pronounced. The patient had not slept for weeks. On admission to the hospital, 10 c.c. of diethyl oxide were administered in 90 c.c. of saline. In less than 10 minutes after the infusion started, complete analgesia was achieved. In the morning a large amount of the edema had been absorbed. The ischemia, edema and pain had been greatly relieved. There was a definite increase in skin temperature in all cases. The diethyl oxide could be detected on the breath after eight to 15 hours. The oldest case treated by this method is almost five months old. The effect on the blood pressure and pulse rate is identical to the intramuscular method.

TABLE 3

RESULTS OF INTRAVENOUS INJECTIONS OF DIETHYL OXIDE ON THE RELIEF OF ISCHEMIA AND PAIN IN 26 CASES

	Good	Fair	Poor
Diabetic ischemic limb	17	0	0
Arteriosclerotic ischemic limb	4	0	0
Buerger's disease	2	0	0
Causalgia hand		1	0
Raynaud's syndrome	2	0	0

The above is a summary of the results of the efficiency of diethyl oxide in relieving pain and ischemia.

It will be noted that of the 26 patients treated by the intravenous method after a period of four months, results have all been commendable. Necessarily, it will remain to be seen whether the present good results will continue to be as good as they were in the abandoned intramuscular method.

COMMENT

This study appears to indicate that the intravenous method of administering diethyl oxide in saline is a safe method of relieving severe pain and ischemia and elevating the temperature of the involved extremities.

It is of importance to point out that the relief of pain is a function of the patient's circulatory status. For example, it has been found that the simple night pain of the senile diabetic and arteriosclerotic patient can be relieved readily by the use of diethyl oxide over a short period of time. The explanation for the lowering of the threshold of pain at night is not yet fully understood. The phenomenon is real and does disturb the patient's rest. Perhaps the distractions of the daytime heighten the threshold of pain. Other facts worth noticing following the use of diethyl oxide can be illustrated from a study of patients having Buerger's disease and Raynaud's disease with established lesions of the digits. The severe and terrifying initial pain that these patients complain of is usually relieved by diethyl oxide and the patients are able to obtain some rest. However, it is worth noting that following the release from the acute agonizing pain there is a persistence of a milder throbbing pain which may last in gradually decreasing magnitude until the lesion has healed. The pain in an active inflammatory lesion will not disappear until the lesion is resolved.

Diethyl oxide has caused a transitory rise in blood pressure after administration by the intramuscular and intravenous methods. The rise in blood pressure may be counteracted by the simultaneous administration of 100 to 200 mg. of nicotinic acid with the solution.

From the physiologic standpoint, the circulation to the extremities is important. The extremities constitute roughly two-thirds of the body's mass, and, hence it can be seen that any agent which will augment circulation will necessarily benefit the body's economy.

There are three main functions of the circulation[6] in general which can be applied to the physiology of the limbs particularly: First, there is a necessity of supplying the metabolic needs of the large area which constitutes the extremities; secondly, the circulation is an important protective agent against injury through the reaction of inflammation; thirdly, control of the body temperature is achieved through the role of adequate circulation. Diethyl oxide is a drug whose effectiveness in achieving an improvement in circulation to these parts is being observed.

It appears that diethyl oxide definitely increases the blood flow in the peripheral collaterals. Since most of the patients involved in this study are in the senile group, it is my opinion that the increased flow in the peripheral vessels is due to the action of the gas on the small peripheral collaterals. The relationship between the administration of diethyl oxide and the rise in skin temperature and the abolition of pain is too dramatic to ignore. This must, in a way, speak for a definite augmentation of the circulation through a mechanism that is not exactly clear.

As we all know, the arteries of the lower extremities are characterized by the developments of medial calcification and intimal atherosclerosis. Medial calcification per se produces a hard rigid artery. It does not narrow the intima of the artery and therefore does not produce clinical symptoms. Gangrene of the extremities is due to intimal atherosclerosis, not medial calcification.

The *modus operandi* of the diethyl oxide and saline solution, in implementing an apparently sustained effect in a failing circulation, cannot be definitely stated. Certain facts are worth noting. The number of cutaneous capillaries per square millimeter of skin cross section varies from 16 to 65 as compared to 1000 to 2000 in the muscular[7]. In other words, there is a vast network of arterioles, capillaries, arteriovenous anastomoses, venules and subpapillary venous plexuses, all more or less finely balanced in the normal individual. Pathologic changes in arteriosclerosis may induce the factor of anoxia which may cause increased capillary permeability, causing edema and finally devitalization of tissues through inadequate nutrition and oxygenation.

Studies to explain the reason for the unusual effect of diethyl oxide on the collateral circulation are now underway. The approach to this problem will be through the use of short-lived radioactive materials which will be injected into the blood stream and the course of the material estimated through the use of the Mueller - Geiger counter.[8] The next stage will be injection of the diethyl oxide to see the difference after the collaterial circulation is implemented.

The collateral circulation, which has been spoken of, can be compared to the auxiliary motor of a sailing vessel. When there is fuel present, the becalmed vessel can reach port. The diethyl oxide which I have described may be compared to the fuel of the auxiliary motor. This fuel will serve to bring into action the auxiliary circulation which we all possess. There may be improvements on the present drug but a definite beginning is now established.

If this work will encourage others to delve into some of the avenues suggested it will have served its purpose. It is hoped that the limitations as well as the possibilities of this simple and economical method may be tried. Certain circulatory problems may be explored[9]. It would be interesting to investigate the possible application of this method to the relief of pain in cardiac ischemia; to the circulatory factor in certain arthritidies; to cerebral anemia in senile arteriosclerosis; to immersion foot; to thrombophlebites; to trench foot and to the functional disturbance of circulation known as the Raynaud's syndrome; to neurologic ischemic states, and finally, to possible surgical applications.

SUMMARY

1. The use of an important drug, diethyl oxide, is described in a new role for the treatment of circulatory states characterized by ischemia.

2. The mechanism of the action of this

drug in producing the physiologic effects is not yet explained.

3. The use of this drug accomplished primarily its most important function in overcoming ischemic pain.

4. It is equally successful when used in time in arresting the impending necrotic process.

5. The safety factor in the first 60 cases reported has been unblemished; proper cautions have been enumerated.

SUPPLEMENTARY REPORT

Since the reading of this paper on February 11, 1946, an additional forty patients have been treated making a total of 100 cases treated with diethyl oxide. Again a careful analysis of the results have revealed that the prelimenary observations have been correct. A short summary will be presented bringing this work up to date.

TABLE I

DISTRIBUTION AND TYPE OF TREATMENT IN 100 CASES OF ISCHEMIA AND PAIN TREATED WITH DIETHYL OXIDE

	Intramuscular Diethyl Oxide and Oil	Intravenous Diethyl Oxide
Diabetic ischemic limb	23	32
Arteriosclerotic ischemic limb	9	18
Buerger's disease	1	12
Arterial thrombosis subclavian artery	1	
Causalgia		1
Raynaud's syndrome		2
Varicose ulcer leg		1
Total Number of Cases	34	66

Again it is worthy to note that the intravenous method of administration of diethyl oxide is not new. As long ago as 1847—one year after the introduction by Morton, this agent was given as an anesthetic by Pirogoff and Van Flour[10] but its use was later abandoned. Also as general anesthetic, it was reintroduced by Burkhardt[11] of Germany in 1909. Following this, its has been used spasmodically up to the present time. An interesting summary of the place of diethyl oxide as an intravenous general anesthesia is given in Charles Adams'[12] monograph Intravenous Anesthesia. The valuable fact to be gained from reviewing its rise for this purpose has been its high degree of safety and freedom from complications. As stated by Adams, "Ether is but little used today by the intravenous method, but many authorities still believe that the method is worthy of further consideration. I can state that many of the disadvantages that were considered as such at the time the method was introduced may now be refuted. Regardless of its disadvantages, ether is still one intravenous anesthetic which is associated with the minimal risk to the patient and which satisfies the demands for most surgical operations. As yet the latter cannot be said for most of the intravenous anesthetics in use today."

That this observation is correct can be borne out by my own experience after the administration of approximately 1500 doses of intravenous diethyl oxide used in the treatment of peripheral vascular disorders. Certainly there have been few drugs in medical practice with the safety factor of diethyl oxide as evidenced by 100 years experience in its important role in anesthesia alone.

A total of sixty-six cases of ischemic disorders of the limbs have been treated by the intravenous route to date; forty of these during the past four months. The age groups of these patients range from 19 years to 86 years of age.

Method: The solution was prepared according to the type of patient being treated. Three types of dilution media were used viz: Plain isotonic sodium chloride, sixth molar lactate and 5% dextrose in distilled water. For the diabetic patient with actual necrotizing gangrene, a sixth molar lactate solution was used. Physiological saline was the usual diluting media in uncomplicated cases except, in a few arteriosclerotic patients with hypertension who received five per cent dextrose in distilled water.

Experience gained after the first twenty-six cases treated by the intravenous route caused me to change the concentration of the diethyl oxide from ten percent to five vols per cent. This was done for two reasons. The ten per cent solution usually caused a transient burning reaction which proved objectionable as a few patients complained bitterly of burning pain which was intense enough to cause them to withdraw the needle from the vein themselves. A second objection was even more bothersome to me, namely, thrombophlebitis. This thrombotic phenomenon was seen in fifteen per cent of the patients. This disturbing development appeared to decrease when the concentration of diethyl oxide was cut down to five per cent. Eighteen patients out of the forty last treated were given 200 cc. of one of the three diluting media; made up on the basis of 190 cc. of diluting fluid to 10 c.c. of diethyl oxide. This was administered to the patient twice daily. As before the vein was secured with a syringe using a 20 gauge needle. After aspirating the blood, the adapter from the diethyl oxide solution was connected to the needle. When this was done there was more assurance that one was definitely in a vein and that one did not run the risk of infiltrating the tissue with the solution, thereby causing pain.

The rate at which the fluid is administered is roughly 3 c.c. per minute or roughly 45 drops every sixty seconds. This rate is advanced to 60 drops per minute after the 1st three or four ampoules are given, thus taking approximately one hour for the solution to be absorbed.

TABLE II

SIDE EFFECTS FROM INTRAVENOUS DIETHYL OXIDE IN 66 CASES

Emesis	1
Mild euphoria	5
Drowsiness	6
Mild excitement	1
Hysteria	none
Convulsions	none

In order to cut down on the number of venipuncture a day I have given the last twenty-two patients one infusion daily of 2½ per cent,, diethyl oxide in a dilution media of 1000 c.c. This has proven the most acceptable routine and I feel that it has both saved veins and cut down on the inconvenience of two daily infusions.

The present plan calls for twelve consecutive infusions, followed by a rest for two days, after which twelve more infusions are given, totaling 24 injections in all.

The last forty 'cases of ischemic limbs treated comprised of fifteen diabetics, ten patients with Buerger's disease, one case of varicose ulcer and fourteen arteriosclerotic patients. The average age of the diabetic patients was 65 years of age, the Buerger cases 45 years; the arteriosclerotics 61 years of age.

It is worthy to note the increasing incidence of vascular complications in the diabetic. Prior to 1921, before the day of insulin, the leading complication of diabetes was coma; today it is arteriosclerosis. In effect this is consistent with the general trend in the general population morbidity. Arteriosclerosis and vascular complications is the leading cause of death today. It is only fair to assume that the change in complication of diabetes is more apparent than real. Insulin has made possible a longer life and has removed the ever present threat of coma.

In this series of cases careful observations have been made after the completion of treatment as set forth above, and the following results have been noted:

CLINICAL TRIAL IN FORTY CASES TREATED BY THE INTRAVENOUS METHOD. BLOOD CHANGES:

For generations it has been taught that diethyl oxide was a rather dangerous drug to give to arteriosclerotics and diabetics. This view probably had its origin because of the tendency of this drug to cause acidosis after prolonged anesthesia. I have been unable to confirm any tendency to acidosis in any of the diabetic patients treated by me. The caution has also been mentioned that the kidney is likely to be injured in both the aterioscl erotic and diabetic. Careful observations have failed to confirm this also.

TABLE III

RESULTS OF INTRAVENOUS INFUSION OF DIETHYL OXIDE ON THE RELIEF OF ISCHEMIA AND PAIN IN 66 CASES

	Good	Fair	Poor
Diabetic ischemic limbs	29	3	
Arteriosclerotic ischemic limbs	16	2	
Buerger's disease	10	1	1
Varicose ulcer	1		
Causalgia hand		1	
Raynaud's syndrome	2		
Total Number of Patients	58	7	1

TABLE IV

ELAPSED TIME IN 66 CASES OF REMISSION FROM PAIN AND ISCHEMIA SINCE LAST INTRAVENOUS DIETHYL OXIDE INFUSION

	1-2 Mo.	2-4 Mo.	4-6 Mo.	6-8 Mo.
Diabetic ischemic limb	5	2	8	17
Arteriosclerotic ischemic limb	2	3	8	5
Buerger's disease	3	7	2	
Varicose ulcer	1			
Causalgia		1		
Raynaud's syndrome			2	
Total Number of Patients	11	13	20	22

The safety of diethyl oxide as a therapeutic agent has been extremely noteworthy. In the whole series of one hundred cases treated there has not been one fatality or serious complication.

The estimations of serum protein, blood cholesterol, bromsulfalein, P.S.P., non protein nitrogen, red blood cell and hemoglobin values, were unchanged following therapy.

SUBJECTIVE AND OBJECTIVE PROOF OF IMPROVEMENT

In this group of patients, again the most outstanding fact was relief from pain. One of the first reports elicited from the patient is the ability to sleep through the night without being awakened by the agony of so-called night or rest pain. This is apparently the first good effect from the drug. I believe that the basis for this effect is the improvement of the circulation to the limb. A sense of well being or heightened morale characterizes these patients. The drug I feel impliments the smaller collaterals and allows the starving muscle masses to be relieved from ischemia.

Patients with intermittent claudication have also responded very well and have actually been able to walk about the house and take increasingly longer walks without the cramping pain which practically immobilized them before.

Objectively, a simple estimation of the improved circulation is seen by noting a more normal color range after successful treatment. The waxy color is replaced by a more normal hue. The foot no longer maintains its purplish cast on dependency and more significantly maintains its color in the horizontal position.

There is a striking change in the temperature of the extremity. The leg and foot is now much warmer. There is a general vasodilating effect as a result of diethyl oxide therapy. The patient's frequently exhibit a heightened color in their cheeks, the general body warmth is increased. Patients are cautioned not to expose themselves to drafts as their general increase in body warmth leads them to be careless with their cover at night.

The most dramatic role that diethyl oxide has played has been the actual preservation from amputation of diabetic limbs that have already the stigmata of either dry or wet gangrene. All such cases begin primarily on a basis of arteriosclerosis. The actual area of necrosis has usually been preceeded by a thrombosis of an important artery, associated with a gradual obliteration of the vessel lumen. The consequence to such an occlusion is the establishment of a collateral circulation. From a practical standpoint we can probably correlate the patients history of intermittent cramps on walking with the failure of his major circulation and possibly an attempt of his circulatory system to develop collaterals. As McKittrick and Root[13] have remarked, "The establishment of collateral circulation is a matter of months and years and not of weeks." The plain fact is however, that some collateral response is always in evidence. Injected specimens of amputated limbs in my own practice as well as the observations of others have shown an almost unbelievable system of collateral vessels that exist in the almost complete absence of any help from the larger arteries. As Winternitz[14] has observed, the collaterals "may shunt a considerable amount of blood around an occluded or constricted region." In effect he has observed that the "cross section of the accessory bed is not negligible in comparison with the cross section of the lumen of the vessel."

The affect of diethyl oxide is probably on these collaterals. The progress of the necrotic area appear to be arrested; the painful stimuli from the dying limb are diminished and ultimately leave.

The following is the case history taken

from the practice of Dr. Sam B. Saiewitz, surgeon, New Orleans:

"The case under my care is that of a diabetic of long standing who is 62 years old. He had a large gangrenous patch on the dorsal and lateral sides of the right leg, a gangrenous area about 3 cm. in diameter of 4 months duration on the right heel, and gangrene of the right second and third toes. This patient has had intermittant claudication for many years and recently has had intractable pain, particularly when the limb was moved or placed in a dependent position. He received large doses of papaverine and nicotinic acid without relief. About three months treatment with diethyl oxide was instituted. Within three days despite the fact that the lower extremity is kept in a dependent position for periods up to three hours, the ulcer on the lower half of the leg has decreased about one half in size and the portion which has not been covered by epithelium is covered with healthy granulation tissue. The ulcer of the heel which had gradually grown larger during the four months period before diethyl oxide was used, is now about one-third smaller and the crater is filled with firm, healthy granulation tissue. The gangrene of the toes has not progressed. During the administration of diethyl oxide the patient becomes drowsy and remains so for 30 to 45 minutes after it is discontinued. There has been no nausea, vomiting, or other side effect.

"Obviously, the circulation has been greatly increased as evidenced by the fact that two gangrenous areas are healing and pain has been entirely relieved since this treatment was instituted. In addition the temperature of the extremities has increased and the waxy color which had been present for several years has been replaced by a normal pink tint. Night pain has entirely disappeared and all analgesics have been discontinued since the first week of treatment, even when it has been necessary to put a considerable amount of pressure on the extremities in moving him about. One of the most striking effects has been the increase in the patient's morale. He is now mentally alert and interested and expects to go to his office and attend to his business shortly.

"In this instance the results certainly warrant its continued use and I feel that further clinical investigation should be done as it may prove useful in other conditions."

The medical consultant in this case, Dr. Manuel Gardberg, has made this observation on the above case also:

"In my case in which I saw diethyl oxide used extensively, there can be no question but that lasting relief from discomfort was obtained immediately, that the circulation in the extremity improved to a surprising degree, that healing progressed where increasing sloughing had been present before. The case in question was an extremely severe one since no pulsations had been present for a period of nine years of my own knowledge.

"I observed no untoward toxic effects from diethyl oxide administered intravenously.

"I feel strongly that further investigation of this method is imperative for in this case it appears to have accomplished that which no other conservative form of therapy could accomplish."

An independent series of cases on a cooperative investigational basis will soon be reported from the U. S. Marine Hospital in New Orleans. Dr. O. C. Williams and Dr. A. H. Lawton were kind enough to offer me the privilege of extending my observations on a suitable group of cases under their care.

In the past three months we have treated approximately 12 patients. Six patients had Buerger's disease; two of whom had bilateral lumbar sympathectomy. Four others were arteriosclerotics; one patient, a boy of 19, with bilateral varicose ulcers; and finally one patient with a contused non-healing wound.

The results of therapy with intravenous diethyl oxide were very heartening. The method used has been outlined above. Patients with Buerger's disease all had remissions; two already discharged. The patients with severe arteriosclerotic ischemic limbs improved. The other two patients improved greatly. Pain and ischemia were relieved. The morale of the entire group was very high.

SUMMARY AND CONCLUSIONS

The interval between the first sixty patients and the last forty patients has been a rather interesting one.

The past eight months have demonstrated that the intravenous method of treating ischemic limbs is eminently safe. It is a method that may be applied to a rather here-to-fore hopeless group of clinical conditions. The dosage and administration schedule are also very simple.

It is well to remember that in the gangrene complicated by infection diethyl oxide and penicillin work well together.

The time period for a severe lesion to heal in the advanced diabetic or an arteriosclerotic patient is not constant. In some cases as many as six to eight weeks may go by before a noteworthy growth of granulation tissue take place. This lag period however is shorter where a more adequate collateral circulation is already present. If the patient is relieved of his pain and the wound is not progressing it is well to be patient. When the blood supply becomes adequate the usual tissue response becomes evident.

It has been my practice to give each patient nicotinic acid, either 100 to 200 mg. three times a day, according to the limit of his tolerance. A polyvitamin and added ascorbic acid are also included.

A side effect of diethyl oxide now being studied is its effect on the blood pressure. It has been observed that a perceptible lowering of the blood pressure has occurred in several hypertensive patients. What this may hold clinically will have to be reported at a later date. Another side effect is a profuse diuresis. This will be studied and reported later.

It is interesting to speculate that perhaps vasospasm may be, after all, due to a lack of higher alcohol somewhat related to diethyl oxide, an alcohol which may be absent in the very group of patients being discussed. One fact is definite, namely, that this drug exerts its action and is eliminated unchanged 96% via lungs, whereas, its close relative ethyl alcohol is completely metabolized.

Further clinical investigational work with this simple and safe chemical agent appears warrented from this study.

I wish to give special thanks to Dr. Harvey Colvin, pathologist; Dr. M. L. Michel, sugeon; Dr. Sam Karlin, surgeon; and Dr. Michael Teitlebaum, radiologist of the Touro Infirmary staff for their help and encouragement. I also wish to extend my thanks to the following resident staff of the Touro Infirmary:

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DISCUSSION

Dr. Rudolph Matas: Dr. Katz has been interested for years in diabetes and his experience in this field has given him specially favorable opportunities for the study of one of its most dreaded complications — diabetic gangrene. In this connection we should remember that diabetes is only one of the group of diseases in which gangrene of the extremities is a common characteristic; and that underlying the gangrene is the gradual reduction of the blood supply of the part. Familiar examples of these non-diabetic vascular disorders are senile arterio-sclerotic gangrene, Buerger's and Raynaud's diseases, juvenile acrocyanosis, presenile gangrene, thrombo-embolic gangrene, etc. In all these disorders, gradual or acute local ischemia is the precursor and cause of the gangrene. The dominant subjective symptom in all of these necrotizing ischemias is *pain* — the pain of starved and dying tissue, which is surpassed by few other pains, unless perhaps, the agony of angina pectoris or the fulgurations of tic douloureux. These pains, though violent and overwhelming while they last, are intermittent, and not continuous, persistent and progressive, such as the pains that characterize the constant clamor of the ischemic group, which is only stilled by the death of the blood famished part.

This then is the type of pain and superpain which Dr. Katz has been dealing with for years, but not with the special insistence upon its suppression and control by the new therapy which he has evolved and applied during the last twelve months.

Dr. Katz has given us a graphic account of his strenuous, but vain efforts to cope successfully with the stubborn pains of the necrotizing ischemic processes with all the resources of the modern materia medica until, fortunately, a year ago, he tried intramuscular injections of ether (Diethyl Oxide), an old and discarded suggestion of the 18th century pharmacopeia, which Dr. Katz applied in a modern guise. The surprisingly prompt and dramatic relief which the patient experienced after the first treatment convinced Dr. Katz that he was on the right tract and that he should persevere in his efforts to improve the administration and efficiency of his modernized analgesic formula. The injection of ether into the tissues (Rynd, Dublin, 1845) for the relief of pain had been abandoned because of the excruciating pain caused by the injection of the crude, undiluted ether. After experimenting upon himself, Dr. Katz robbed the ether injections of their chief terror by making them painless with a local anesthetic — benzocaine. He then added vastly to the duration of the analgesic effect of the injections by suspending the ether in peanut oil, which slowed up the wide diffusion of the ether and improved its tolerance by the tissues; finally, he safeguarded against infection by adding 100,000 units of penicillin to 100 c.c. of the combined drug. This precaution he later discarded as unnecessary. Twenty c.c. of this mixture, equal to 10 c.c. of diethyl oxide, became, after numerous trials on himself, the optimum and safe dose.

He had injected 34 cases, chiefly victims of diabetic gangrene, and a few cases of arteriosclerotic gangrene and one of Buerger's disease, and had obtained very positive analgesic effects in many, and a decided histological effect in others. In all, an appreciable improvement in the local circulation was observed. He had begun to tabulate his cases when the appearance of blisters, ulcers, sloughs and painful indurations at the site of the injections compelled an immediate suspension of the intramuscular treatment. In the face of this prohibitive complication his thoughts turned towards the intra-venous injection of ether as an alternate to the intra-muscular injections. After experimenting upon himself, he applied the intravenous injections to the 26 patients reported at this meeting. All these patients have been treated with a 10 per cent diethyl ether, suspended in saline, of which 10 c.c. are slowly injected by continued drip, as the maximum dose. These injections have not been followed by untoward or alarming symptoms except drowsiness, mental excitement in some cases and a vomiting spell in one case. Immediate relief from pain follows the wide diffusion of ether in the circulation, quickly detected in the breath: also a flush of the face and a palpable increase in temperature of the ischemic limb. Sudden increase in the blood pressure and pulse rate, which quickly subside, leaving no extraordinary consequences except the relief of pain which varies in duration from a few hours to an indefinite time over weeks and months, depending on a number and variety of factors.

The impressions gathered after hearing a number of clinical reports, chiefly as recorded by Dr. Katz and his associates and by questioning the patients themselves, — are very much like those which follow the reading of the records of lumbar sympathectomies for the relief of the same ischemic conditions in the lower extremities. In general terms, it would appear that the relief from the simple method of intravenous etherization is more rapid and, in some cases, of longer duration that the relief of pain by lumbar novocainization and even surgical lumbar sympathectomy. The duration of relief from pain is quite variable and depends upon many factors, but chiefly upon the progress and control of the ischemia and of the causes that underlie it. Dr. Katz' table No. II, which is perhaps most significant, shows that the duration of relief may last only a few hours, days or months or permanently when the cause of the ischemia has been removed.

I have had no personal experience in the application of Dr. Katz' treatment but have examined several of the patients he has referred to me and others that I have seen with him. He has very kindly kept me in touch with the progress of his observations and of his statistics and results as he has projected them on the screen tonight. I was particularly interested in the case of the first patient on whom he tried his intramuscular injections of ether in peanut oil, made painless by the use of benzocaine.

The diagnosis in this case was unusual: Ischemic paralysis of the left arm with insipient gangrene at the fingertips of the corresponding hand, caused by the migration of an embolus from a phlebetic thrombus through the foramen of Botal, which lodged in the first division of the left subclavian artery, causing a complete block of the arterial circulation in the arm. The pain in this patient had challenged all the analgesic agents of the modern materia medica, short of general narcosis with anesthetic gases. The intramuscular injection of the ether mixture gave immediate relief and of unexpectedly long duration. I saw the patient at intervals and noted the gradual improvement in the circulation of the ischemic hand and arm as the collateral circulation gradually came to the rescue of the gangrenous fingertips. In this patient, the injections were repeated twice daily, 20 c.c. each time, for one month, discontinued when the patient's recovery was assured and he returned home, where he is working hard.

Quite apart from the inherent interest attached to the problems of these ischemic patients, I have been particularly attracted to Dr. Katz' work by his great earnestness, his sincerity and by the enthusiasm of his convictions in the reality of the benefits that have accrued from his new therapy,— a therapy which he has evolved with no end of painful experiences and serious risks, to which he has subjected himself in order to establish standards of tolerance and safety for his intravenous solutions before trying them on his patients. Besides the evidence furnished by Dr. Katz' personal and collective observations which confirm the value and relative safety of ether as a powerful vascular sedative, his experience would also show that the ether injected intravenously is capable of improving the circulation and the nutrition of the ischemic tissues.

This brings us to the question of whether Dr. Katz' ether therapy endows the involved tissues with reparative properties beyond those of a purely analgesic drug. It is quite plain that dead tissue cannot be resurrected, but it is also quite possible that if the circulation around and about a sloughed area is activated by fresh additions to its blood supply, the slough may be eliminated and actual repair attained. Finally it would appear, now that the technique of vascular etherization has been made relatively safe and simple by Katz' experiments, that it is possible for any competent practitioner to determine by his personal observations whether ether in the circulation, brought directly to the ischemic tissues in this way, relieves pain purely as a temporary analgesic, or as a permanent vaso-dilating agent capable of reparative functions, if consistently and persistently applied? The answer to this question should not be long delayed as it is simply a matter for individual and collective clinical observation with no need of elaborate laboratory experimentation to determine its reality or fiction. This is what Dr. Katz has asked for and should be fairly tried.

In conclusion I believe that Dr. Katz has added a valuable contribution to the therapy of pain in vascular disease, and for this alone he deserves much praise and the thanks of the profession who will profit by his very valuable and painstaking studies.

Dr. Joseph A. Danna (New Orleans): I have had no experience with this method but I am very much interested in the fact that ether has an additional function or additional effect to those we are already familiar with. For the past seven or eight years I have called attention to the fact that ether as used for surgical anesthesia does two things and the two things are entirely separate, especially in so far as the duration of the effect is concerned. First, it puts the patient to sleep; second, it relieves pain. The narcosis lasts a certain length of time after the anesthetic has been discontinued, say half an hour, but for an hour and a half or two hours after that first half hour, you can continue to operate on your patient and the patient will not feel any pain. Now, I remember particularly the case of a negro woman who was given about 20 minutes of ether inhalation after the operation was started, and we worked for nearly three hours doing a gastric resection, and during the latter hour and a half of that operation she talked across the screen to the intern about a chicken dinner she had promised him. That is one of the extreme cases. During an operation for incisional hernia, the patient having had ether for 15 minutes after operation had begun, after I had freed everything and was closing the peritoneum the patient began to gag. I thought I would not be able to finish this operation with the patient gagging, but the anesthetist noticed he had an airway in the patient's pharynx the presence of which was causing the patient to gag. He removed the airway and we got along and finished the operation without difficulty. That is, for one hour after he had so recovered from the narcosis that the presence of the airway made him gag, we were able to continue to operate without further anesthesia. The point in bringing out this experience of mine is to show that pain is abolished by the ether a long time after the patient wakes up and is able to talk. Of course I have never tried to continue the operation for two or three weeks. In the light of Dr. Katz's experience, it may be that the next week after you give a certain amount of ether you could make an incision and it would not hurt. He shows that the ether does relieve pain, and for some time.

I asked Dr. Katz whether he had used ether by inhalation. It seems it should do just as well by inhalation as by other methods.

Dr. Robert A. Katz (in closing): I wish to offer my thanks to Dr. Rudolph Matas and Dr. Joseph Danna for discussing this paper.

In the first place I should like to apologize for omitting a very important part of the paper which concerned the technic. Dr. Matas said, "well you forgot to tell them how to do it." That is important isn't it? The method that I have used was the giving of a 10 per cent solution, 90 c.c. of saline and 10 c.c. diethyl oxide. There are certain complications in patients that have been found out; after giving them the initial infusion for two or three minutes there may be a certain amount of burning. Naturally after the first time you do not want to be continually bothered by being called back to treat this burning which is only transitory. I have cut the concentration down for general use now to 5 per cent. I am now making out a list and trying to compile statistics to see what percentage will give the least amount of initial pain. The initial pain, as remarked before, is very transitory. I personally experienced this burning sensation, going up gradually to the elbow and suddenly stopping as soon as I stopped the infusion for a few seconds; then continued the infusion without any pain. It is easily possible therefore to give a large amount of saline and smaller concentrations of diethyl oxide, thereby avoiding the effect.

Of course we could immediately say the intramuscular method should be abandoned, unless Dr. Adriani and I can see how we can use it. We do have use for it because unfortunately patients in the older age groups have bad veins.

The inhalation method may work, but of course I can say that whether we will call it diethyl oxide or the most beautiful name from Paris, the patients will know it by its real name, *ether*, and will not come back for the second treatment. I am deeply afraid that would be the one thing not to do if we want to continue to use the material. For ether has, over years and years, become a memory with terrifying implications. Persons usually associate it with nausea and vomiting following its inhalation.

Dr. Adriani, in this very room made a statement I have not forgotten. He spoke on "Hazards of Anesthesia" and in discussing all anesthetics he mentioned ether, and said there is something worse than nausea and vomiting and that is death. That would speak well for the safety of the material. I would say that persons who are terrified by ether and would not get close to it would be against using it. I think any avenue that can be given should be considered but probably it would be best to avoid putting the patient to sleep.

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NEW OFFICERS

The annual State Society meeting which was held in Alexandria May 6-8 from all accounts was a great success both scientifically and socially. There was a large attendance and the members who were present, to a man, enjoyed the annual convocation.

As according to custom, the president-elect was installed to serve for the coming year. Dr. McMahon should make an outstanding president. He is one of the most prominent men of medicine in the state and has always taken a great interest in organized medicine from the time he graduated from Tulane in 1921. Following this he served an internship in New Orleans Charity Hospital and then had special training in the Woman's Hospital in New York. His work is confined largely to obstetrics and gynecology and he is chief of this division at Our Lady of the Lake Sanitarium and the Baton Rouge General Hospital.

Prior to becoming president-elect of the Society, Dr. McMahon was the councilor of the Sixth District and at the present time is vice-president of the Louisiana State Board of Medical Examiners.

The State Society can be assured of an excellent administration under Dr. McMahon's aegis. He is a man of delightful personality, forceful and interested in the problems of the medical profession both locally and nationally.

Dr. Gilbert C. Anderson, the well known neurosurgeon of New Orleans and past president of the Orleans Parish Medical Society, was selected as president-elect. Of Dr. Anderson more will be written at a future date. One of the most popular doctors in northern Louisiana, Dr. George Wright, an outstanding surgeon in Monroe, was elected first vice-president. The popular and most likeable Dr. W. P. D. Tilly, of New Iberia, a man well known to all members of the organization and particularly to those in southern Louisiana, was made third vice-president. We are glad to say that Dr. J. P. Sanders, of Shreveport, was re-elected as second vice-president; Dr. A. V. Friedrichs, New Orleans, was again made chairman of the House of Delegates and Dr. M. D. Hargrove, Shreveport, vice-chairman. These men have served faithfully and well deserve re-election.

We are pleased also to say that Drs. Zander, O'Ferrall, Jones, Tooke, Barker and Martin were re-elected as councilors of their particular districts. These are outstanding men in the organization and well merit their re-election. Dr. John Snelling, of Monroe, replaced as councilor of the Fifth District Dr. George Wright who was advanced to vice-president. Dr. Snelling has only recently returned from the armed service where his work was notable. Dr. Couvillion, of the Eighth District, nominated Dr. O. B. Owens to replace him as councilor. Dr. Owens has been very active in the Society. He did a magnificent job as chairman of the Committee on Arrangements in Alexandria and has given a tremendous amount of time and thought to plans for voluntary pre-payment medical service, having served as chairman of this committee of the State Society.

The vacancies on the standing committees were filled by election as follows:

Journal Committee, Dr. L. J. Menville, re-elected; Dr. Sam Hobson and Dr. C. M. Horton, past president of the Society. The Journal is to be congratulated on having these men selected to guide its future destiny.

On the Medical Defense Committee was elected Dr. J. T. O'Ferrall for a period of three years and Dr. C. B. Erickson, of Shreveport, was made chairman, most excellent selections.

The important Public Policy and Legislation Committee will be in the capable hands of Dr. Roy B. Harrison, Chairman, Dr. C. G. Cole and Dr. O. C. Rigby. Three better men could not have been selected from the State Society to guide the legislative policies of the organization in the state legislature.

The very competent Committee on Scientific Work was re-elected in toto; Dr. P. T. Talbot, Chairman and Dr. Edgar Hull and Dr. R. T. Lucas, members.

It is nice to know that Dr. J. Q. Graves, of Monroe, was again re-elected as delegate to the A.M.A. He has been a powerful influence in the A.M.A. As his alternate was selected Dr. C. H. Webb, of Shreveport. After serving for many years as delegate to the A.M.A., Dr. Leon J. Menville, was unable to accept re-election and in his place was elected the efficient and able past president of the State Society, Dr. Val Fuchs, of New Orleans. As the alternate Dr. M. D. Hargrove, vice-chairman of the House of Delegates, was chosen. The Society is fortunate in having two such able delegates and two such competent alternates to represent the organization in the A.M.A. House of Delegates in view of the important decisions that must be made by this representative organization which have to do with the future of medical practice in this Country.

As per custom, the next, or alternate annual meeting will be held in New Orleans.

PENICILLIN IN MENINGITIS

Because of conflicting reports regarding the most efficient method of administration of penicillin in patients with meningitis, Kinsman and D'Alonzo* undertook a study concerning the penetration of penicillin into and out of the spinal fluid. In four patients with meningococcal meningitis treated with penicillin intravenously and intrathecally, they concluded from studies of penicillin concentration in the spinal fluid that intrathecal injections were not necessary oftener than every sixteen hours and perhaps even to twenty-four hours. In two patients with tuberculous meningitis receiving large doses of penicillin extrathecally only a trace of penicillin could be found in the spinal fluid after eleven hours of treatment in one case and after twenty-three hours of treatment in the other. Other studies showed that penicillin may penetrate into the spinal fluid but does so irregularly and in low concentrations.

Their studies showed that when given only extrathecally "penicillin penetrates into the spinal fluid too irregularly and in concentrations too small to satisfy fully" the requirement for successful therapy. An exception to this is syphilitic meningitis where intramuscular penicillin seems to give excellent results. It is their opinion that in pneumococcal, streptococcal and staphylococcal meningitis penicillin should be given by both the extrathecal and intrathecal routes. For meningococcal meningitis, sulfadiazine is probably preferable, but if penicillin is used it should be given by both routes.

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*Kinsman, Lieut. Col. J. Murray, and D'Alonzo, Capt. C. Anthony. New Eng. Jour. Med. 234:459-463, 1946.

SALICYLATE TOXICITY

The use of salicylates has always been widespread and justifiably so because of the marked symptomatic relief so frequently obtained. Recently even larger doses than previously used have been advocated, especially in rheumatic fever. The investigations of Caravati and Cosgrove* on the mechanism of the action of salicylate toxicity are very interesting and tend to disprove some of the time honored beliefs on this subject.

The authors first comment on the intravenous use of sodium salicylate, and state that in their experience "the patients receiving salicylates intravenously experienced more nausea and vomiting than patients who received it orally." A series of cases was studied as to the toxic effects of salicylates, especially on the gastrointestinal tract.

The customary use of sodium bicarbonate with salicylates by mouth for the purpose of decreasing gastric irritation by decreasing the release of salicylic acid, was investigated. It was found, confirming the work of other investigators, that sodium bicarbonate reduces the serum salicylate level. This is brought about by an increase of urinary salicylate. Soda bicarbonate does relieve the toxic symptom of nausea, either when the salicylate is administered orally or intravenously. This action is therefore apparently due to the reduction of serum salicylate level and the action it has in preventing a satisfactory elevated level. The blood salicyl levels were found to be dependent on the size of the dose and the pH of the urine; the lower the urinary pH, the higher the plasma level of salicylates.

Twenty patients receiving salicylates were subjected to gastroscopic examination while toxic symptoms were present. In 12 of the patients the blood salicylate levels were over 300 at the time of the examinations. "No significant abnormalities of the gastric mucosa were observed in any of these cases." They concluded there was no evidence of any irritating effect on the gastric mucosa from intravenous or oral salicylate.

In another group of cases gastric contents were aspirated and analyzed. In no instance was there any change in basal acid secretion or any trace of salicylic acid found in the contents in 15 cases. All of them had salicylate levels over 250 gammas per cubic centimeter, obtained either by the oral or intravenous route. The findings certainly tend to disprove the rather well entrenched idea that nausea and vomiting during salicylate therapy are due to salicylate acid in the stomach, rather, that the action is on the cerebral centers instead.

All of these observations are of considerable importance in their clinical application in regard to the use of this valuable drug.

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*Caravati, Charles W., and Cosgrove, Edgar F.: Salicylate toxicity: the probable mechanism of its action, Ann. Int. Med., 24:638, 1946.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

1946 ANNUAL MEETING

The annual meeting of the State Society held in Alexandria May 6-8 was very well attended, there being 289 members, 34 guests, and 54 exhibitors present. The scientific sessions and the social functions were enjoyed by the doctors in attendance and it is felt that this first postwar meeting was indeed a profitable and pleasant occasion.

Following is abstract of the minutes of the House of Delegates meeting and reports of the Committee of Medical Defense and the Committee on Resolutions.

ABSTRACTED MINUTES HOUSE OF DELEGATES 1946

Roll Call—Sixteen officers, nine past presidents and 67 delegates present.

Minutes—Minutes of the 1944 meeting of the House of Delegates and meetings of the Executive Committee since that meeting were approved as published with reports of officers and committees.

Communications—Letter from the Secretary-Treasurer, Dr. P. T. Talbot, expressing regret at not being able to attend the meeting due to the fact that he was confined to the hospital, having sustained a fractured hip, was received.

Letter from the Orleans Parish Medical Society in re termination of the EMIC program: It was stated that this subject would be included in report of the special committee in re projects of the State Department of Health.

Letter from the American Medical Association concerning appointment of a Committee on National Emergency Service or a Committee on Military Service: Communication accepted and Executive Committee empowered to appoint such a committee.

Letter from Librarian of Tulane University in re a new Army Medical Library building: Received and filed.

Special Order—Telegram and flowers sent to Dr. Talbot.

List of members who died since 1944 meeting read.

Address by Mr. Jay C. Ketchum, Executive Vice-President of Michigan Medical Service and Executive Director of the Associated Medical Care Plans, concerning voluntary prepayment medical care plans.

Address by Dr. Lee D. Cady, Medical Branch Director of the Tenth Area of the Veterans Administration on the subject of medical service for veterans.

Report made by Dr. King Rand concerning recent trip to Washington where he attended a meeting of public health officers.

After submission of report of a special delegation to Washington which submitted a brief to the Senate Committee on Education and Labor, before which the hearings on the Wagner-Murray Bill are held, the following motions were adopted: 1. That the Executive Committee of the State Society investigate this matter (in re telegram signed by Dr. George McCoy expressing approval of the bill) thoroughly and if at the conclusion of the investigation the facts are as we believe them to be, that Dr. McCoy sent the telegram as inferred, in his capacity of Dean of L.S.U., the Executive Committee of the State Society be empowered to express the censure of this body. 2. That the State Society send a letter, or whatever is necessary, to the authorities of L.S.U. to find out if this is the belief of the faculty of the University itself. 3. If the telegram was signed as an individual and not as Dean of L.S.U. he also be censured.

Survey for the study of child health services in the state approved.

Recommendation that the State Society contact the Governor and representatives and senators of the state and recommend to them the urgent need for the establishment of a third mental hospital in the state, to be adjacent to New Orleans, was approved.

Recommendation that the Councilors who have unorganized parishes in their district do what they can to get these parishes organized; if a parish is too small two or three to be organized together, was approved.

Rearrangement of the annual meeting programs was referred to the Executive Committee, to be worked out with the special committee appointed for this purpose.

Appointment of part-time specialists at the Charity Hospital in Lafayette was brought to the attention of the House and it was stated by a member of the Board of Institutions present that he would bring this to the attention of the Board.

A statement concerning refusal of physicians to permit their names on any panel should S.1606 or any other bill providing for compulsory medical insurance be passed, was submitted for signatures of members desiring to sign such a statement.

Report of the special Committee on Projects of the State Department of Health was called for, however, no report was submitted.

Dr. E. M. Toler was recognized for his cooperation in legislative matters.

Motion was made and carried that money secured for advertising in the 1946 program be turned over to the local Committee on Arrangements, if necessary; amount not needed to be turned back to the general fund.

Tribute was expressed to men who served our Country in the armed services by standing vote of the House.

Special thanks were expressed to Dr. Roy B. Harrisson for having served as secretary at this meeting.

Appointment of Committees to Serve in House of Delegates—Credentials: Dr. C. B. Erickson, Chairman; Drs. J. P. Palermo and N. T. Simmonds, members.

Resolutions: Dr. John Snelling, Chairman; Drs. H. C. Hatcher and R. F. Sharp, members.

Fraternal Delegate—Dr. Bayard T. Horton, Rochester, Minnesota.

Suggested Amendments—Amendments to the Charter, Constitution and By-Laws, as suggested by the Executive Committee, concerning associate membership, proration of dues for intern members who became active members, and expense of members of the Executive Committee to meetings of that committee, it was stated, have been referred to the Committee on Revision of the Charter, Constitution and By-Laws.

Legislation Opposed—Bill proposed for presentation at the Louisiana Legislature, which will permit citizens of foreign countries to receive temporary permits to intern and serve residency in private and public hospitals of Louisiana and to serve fellowships in medical schools and private clinics and to take training with private doctors who are qualified as specialists by their respective boards.

Section 3 of S.1606 (Wagner-Murray) and S.1318 (Pepper) in re EMIC plan.

Legislation Approved—Hill-Burton Act, S.191.

Reports of Officers and Committees Containing No Recommendations—

The following reports were received and filed: Council; Councilors of First, Second, Third, Fourth, Fifth, Sixth, Seventh and Eighth Districts; Committees on Budget and Finance, History of Louisiana State Medical Society, Industrial Health, Journal, Medical Defense, Mental Health, War Participation.

Reports of Officers and Committees Containing Recommendations—

President 1. Each district society invite the president and secretary to at least one meeting during the year: Councilors instructed to notify the president and secretary of at least one meeting a year. 2. Traveling expenses of members of Executive Committee to meetings of that committee be paid by the State Society: Approved. 3. Provisions be made to pay the expenses of delegates to A.M.A. meeting each year: Approved. 4. State Society sponsor and give wholehearted cooperation to any organization that is willing to sell prepayment medical insurance, provided a sufficient number of doctors are on the board of such a company to insure proper medical regulation: Withdrawn by president after adoption of report of Committee on Voluntary Prepayment Medical Care Plans. 5. House of Delegates go on record as approving continuation of present amount of dues: Approved.

Secretary-Treasurer 1. Consider creation of a Council on Medical Service and Public Relations in the State Society: Approved.

Committee on Cancer 1. That the Louisiana Division of the American Cancer Society be reorganized: Motion was made and carried that the Cancer Committee submit to the Executive Committee their proposed plan for reorganization of the Louisiana Division of the American Cancer Society and that the Executive Committee be empowered to act on the plan.

Committee on Care of the Indigent Phy-

sician 1. That the name and purpose of the committee be changed to "Aid to Indigent Members": Approved.

Committee on Congressional Matters 1. That a resume of the bills considered since the first review be forwarded to each member of the Society and also that where members have close contact with any of the congressmen from Louisiana they ascertain the position of such men from the secretary and then if necessary take whatever action they can in an attempt to get these men to take the position of organized medicine in regard to these bills: Approved. 2. That every member of the State Society familiarize himself with the many medical bills being presented in the halls of the United States Congress and whenever any one of these appears contrary to the interest of organized medicine do what they can to get their congressmen and senators to assist in their defeat: Approved.

Committee on Hospitals 1. Approval of the Hill-Burton Act, Senate Bill 191: Approved. 2. Approval and cooperation by the State Medical Society in connection with state survey of hospitals: Approved.

Committee on Maternal Welfare 1. That the agreement with the State Board of Health regarding the present EMIC program be terminated immediately upon approval of this recommendation: Approved. 2. That the Louisiana State Medical Society go on record as opposing S.1318 and so notify the Louisiana senators and congressmen in Washington and that each member of this Society do everything in his power to have this bill defeated: Approved.

Committee on Postwar Planning 1. That this committee be discontinued: Approved.

Committee on Public Policy and Legislation Approval of introduction of a premarital bill was asked by the Committee on Public Policy and Legislation and motion was made and carried that this subject be referred back to that committee.

Committee on Resolutions 1. Copy of resolutions be incorporated in minutes of the 1946 meeting and that a copy be submitted to the New Orleans Medical and Surgical Journal for publication: Approved.

Committee on Revision of the Charter, Constitution and By-Laws 1. Complete copy of revised Charter, Constitution and By-Laws be sent to members of the Society for review and suggestions prior to the next annual meeting; action in regard to same to be taken at the next annual meeting: Approved. The chairman of the committee requested permission to employ an attorney to go over the revised Charter, Constitution and By-Laws before submission to the membership and to do whatever is necessary in connection with the suggested changes, and this permission was granted.

Committee on Rural Medical Service 1. The House of Delegates of the State Medical Society in regular session, Alexandria, Louisiana, May 6, 1946 go on record as endorsing some sort of prepayment medical plans for rural areas, these plans to be approved on the recommendations of the Committee on Rural Health and submitted to the Executive Committee for their approval: Withdrawn by chairman of committee after adoption of report of Committee on Voluntary Prepayment Medical Care Plans. 2. Committee on Rural Health be made a permanent committee of the State Medical Society and that its membership shall be increased to five members and their terms of office shall be for a period of three years, staggered so that not more than two members retire in any one year; these members appointed by the president with the consent of the Executive Committee: Approved. 3. Committee be instructed to look into the possibility of rural hospitals and clinics and make any plans that may seem feasible and submit such plans back to the Executive Committee for approval; this hospital and clinic planning to be carried on under the general outline of the Hill-Burton Bill now before Congress of the United States; this planning is not to interfere with private institutions or hospitals built or under construction but is intended to supply rural areas with good medical care and hospital facilities that have not heretofore been served; the cost of building should be borne partially by local funds and under local control; the operation and maintenance should be cared for partially or all by local expense and definitely be under local control: Withdrawn by chairman of committee after adoption of report of Committee on Hospitals. 4. The House of Delegates, State Medical Society, in regular session, Alexandria, Louisiana, May 6, 1946, instruct the Committee on Rural Health to contact and work with rural and farm groups, National Grange, etc. in working out a more equitable and satisfactory rural medical service in rural areas of the State of Louisiana; that the Rural Health Committee with the advice and consent of the Executive Committee of the State Society be put in power to make contractural arrangements between farm groups and their component medical society; this is intended in no way to force either the parish or district medical societies or any of the farm groups to be bound by any of this committee's commitments but is intended as a working skeleton by which rural areas may be able to get better medical care; this is also construed to be under the advice and supervision of the Executive Committee of the State Society at all times: Approved.

Committee on Scientific Work 1. Committee on Revision of the Charter, Constitution and By-Laws consider amendment in regard to number of papers and other arrangements for the scientific program: After presentation of diagram with suggested set-up for future meetings motion was made and carried that this subject be referred to the Executive Committee, to be worked out with the special committee appointed for this purpose.

Committee on Voluntary Prepayment Medical Care Plans 1. Formation at the earliest time possible, of an adequate organization for the operation of such a state-wide plan, to provide presently for surgical and obstetrical care: Approved. The chairman of this committee read a supplemental report of his committee containing a resolution in which was outlined the plan for organization and operation of prepayment medical service. Also stated in the resolution was provision that the State Society appropriate necessary funds from the treasury of the Society to implement the organization of a chartered, state-wide voluntary prepayment plan. It was also stated that the Executive Committee is to act for the Society in approval or alteration of the plan. The supplemental report of this committee was approved.

Committee on Walter Reed Memorial 1. Dr. Matas be sent a vote of thanks for his untiring work in the designing of this medal: Approved. 2. In the future it be the duty of the president of the Society to present these medals: Approved. 3. The amount in the trust fund and in the savings account of the Walter Reed Memorial Fund be turned over to the General Fund; present indebtedness for purchase of medals liquidated and medals in the future to be bought from the general fund: Approved. 4. The committee be disbanded: Approved.

Report of Louisiana State Board of Medical Examiners—Report accepted and following members recommended to Governor for appointment to fill vacancies: Dr. E. L. Leckert and Dr. E. L. Zander in re Dr. Leckert; Dr. Roy B. Harrison and Dr. C. G. Cole in re Dr. Harrison.

Election of Officers, Committees and Delegates and Alternates to A.M.A.—

President-elect—Dr. Gilbert C. Anderson, New Orleans.

First Vice-President—Dr. George Wright, Monroe.

Second Vice-President—Dr. J. P. Sanders, Shreveport.

Third Vice-President—Dr. W. P. D. Tilly, New Iberia.

Chairman House of Delegates—Dr. A. V. Friedrichs, New Orleans.

Vice-Chairman House of Delegates—Dr. M. D. Hargrove, Shreveport.

Councilor First District—Dr. E. L. Zander, New Orleans; 2 years.

Councilor Second District—Dr. J. T. O'Ferrall, New Orleans; 2 years.

Councilor Third District—Dr. Guy R. Jones, Lockport; 1 year.

Councilor Fourth District—Dr. T. B. Tooke, Sr., Belcher; 2 years.

Councilor Fifth District—Dr. John Snelling, Monroe; 2 years.

Councilor Sixth District—Dr. W. E. Barker, Jr., Plaquemine; 1 year.

Councilor Seventh District—Dr. C. A. Martin, Welsh; 1 year.

Councilor Eighth District—Dr. O. B. Owens, Alexandria; 1 year.

Committee on Journal—Dr. C. M. Horton, Franklin; 2 years; Dr. Sam Hobson, New Orleans; 3 years; Dr. L. J. Menville, New Orleans; 3 years.

Committee on Medical Defense—Dr. C. B. Erickson, Shreveport, Chairman; 2 years; Dr. J. T. O'Ferrall, New Orleans; 3 years.

Committee on Public Policy and Legislation—Dr. Roy B. Harrison, New Orleans, Chairman; Dr. C. G. Cole, New Orleans; Dr. O. C. Rigby, Shreveport; each for a term of 1 year.

Committee on Scientific Work—Dr. P. T. Talbot, New Orleans, Chairman; Dr. Edgar Hull, New Orleans; Dr. R. T. Lucas, Shreveport; each for a term of 1 year.

Delegate to A.M.A. 1946 and 1947—Dr. J. Q. Graves, Monroe.

Alternate to Delegate to A.M.A. 1946 and 1947—Dr. C. H. Webb, Shreveport.

Delegate to A.M.A. 1947 and 1948—Dr. Val H. Fuchs, New Orleans.

Alternate to Delegate to A.M.A. 1947 and 1948—Dr. M. D. Hargrove, Shreveport.

Place of 1947 Meeting—Invitation to hold the 1947 meeting in New Orleans was accepted.

REPORT OF COMMITTEE ON MEDICAL DEFENSE

Following is disposition made of cases referred to the Committee on Medical Defense since report of the committee to the House of Delegates in 1944.

Two cases, one brought against a member in New Orleans and one against a member in Terrebonne Parish, were settled to the satisfaction of the plaintiffs and doctors.

Another case which was brought to the attention of the committee in 1938 was dismissed upon the ground that five years had expired during which time no effort to prosecute the same had been evidenced.

In July, 1945, a threatened suit against a doctor in Bienville Parish was brought to the attention of the committee and it was agreed that the doctor should receive defense, however no further information has been received in regard to same.

Financial report of the Medical Defense Fund, indicating amount in the savings account and trust fund on January 1, 1946, is attached to the original report.

REPORT OF COMMITTEE ON RESOLUTIONS

The Committee on Resolutions of the 1946 meeting wishes to offer the following for consideration:

WHEREAS, The Louisiana State Medical Society has been privileged to hold the 1946 meeting of the organization in the City of Alexandria and is indebted to various individuals and groups for a most enjoyable postwar meeting, and

WHEREAS, The success of the meeting was due to the cooperative work of many groups prior to and during the meeting

IT IS DESIRED to express thanks to the following:

The Mayor, Hon. J. A. Blackman, and the City Council for their hospitality.

Dr. O. B. Owens, General Chairman of the Committee on Arrangements for his active interest and cooperation in all matters, both large and small, incident to the meeting; also to each member of the Rapides Parish Medical Society and the members of the Auxiliary to that Society, who have served as hosts to the meeting.

The daily press of the state which generously gave space in the newspapers for publicity in connection with the meeting.

Mr. Coleman Hudson, Manager of the Hotel Bentley, headquarters for the meeting, and his office assistants and all employees of the hotel who have given efficient and cooperative service.

The exhibitors for their displays which always mean much to the attractiveness of the meeting and assist toward handling expense of the convention.

The advertisers which have cooperated by placing advertisements in the program.

Dr. A. V. Friedrichs for the expeditious manner in which he conducted the business of the House of Delegates.

Dr. King Rand for his report concerning his recent trip to Washington in the interest of organized medicine.

Dr. E. L. Zander for the detailed report of the experience gained by members of the special delegation to Washington.

The Louisiana State Board of Medical Examiners for their splendid work throughout the year and for the report made by the secretary at this meeting.

The entire Committee on Public Policy and Legislation for their untiring efforts in behalf of the interests of organized medicine. Also Dr. E. M. Toler who was given recognition in the House of Delegates for his efforts in this regard.

The Committee on Revision of the Charter, Constitution and By-Laws which has been and is continuing to work on this revision so that the rules and regulations will be more suitable for the proper handling of the affairs of the Society.

The Committee on Prepayment Medical Service which has presented a plan for voluntary insurance meeting the approval of the House of Delegates.

The guest speakers on our program, Dr. Bayard T. Horton, Rochester, Minnesota; Mr. Jay C. Ketchum, Detroit, Michigan; and Reverend Frank M. Segler, Alexandria, Louisiana.

The president and other officers of the Society, most of whom have rendered an additional year of service due to the fact that it was not possible to hold a meeting in 1945. The secretary, Dr. P. T. Talbot, it is to be noted, was unable to attend this meeting, the first such occurrence in twenty-seven years. The unfortunate accident which he sustained two weeks prior to the meeting is deeply regretted by all, however, his services in connection with preparation of the meeting prior to that time and while in the hospital, have been invaluable.

The assistants in the secretary's office and also at the registration desk, the latter being furnished by doctors of Alexandria and the Parish Health Unit.

Military officers to whom this meeting is dedicated and members of the Society for their interest and attendance.

IT IS THEREFORE RECOMMENDED that a copy of these resolutions be incorporated in the minutes of the 1946 meeting and that a copy be submitted to the New Orleans Medical and Surgical Journal for publication.

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LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of very month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

CHARITY HOSPITAL

The regular monthly meeting of the Medical Division of Charity Hospital Visiting Staff was held Tuesday, May 21. A group of most interesting cases was presented and discussed by Dr. Edgar Hull and his staff.

DE PAUL SANITARIUM

The regular monthly meeting of the medical Staff of De Paul Sanitarium was called to order at 8:05 P.M. with Drs. Holbrook, Otis, Barkoff, Soniat, Hite, Thompson, Beach, May, A. Colomb, H. Colomb, Unsworth and Dubos in attendance and Friedrichs and Nelken excused.

The scientific part of the program consisted of a slide preview on the subject of electroshock therapy by Dr. Holbrook, the same that he will present at the Louisiana State Medical Meeting.

The indications, statistical results and contraindications for electroshock therapy were given in detail and discussed later by Drs. Otis, Soniat, Unsworth and Dubos ending the medical section of the program.

The Chairman then asked for the reading of the minutes of the previous meeting and after due motioning and seconding they were adopted as read.

Dr. Otis as Chairman of the Records Committee next read the reports of the various departments of the Institution, at the conclusion of which Dr. Otis moved "that a Committee of condolence be appointed by the President to draw up appropriate resolutions on the death of Dr. Henry Blum, one of the Staff consultants, who died during the past month, these resolutions to be spread on the minutes." This motion was seconded by Dr. Unsworth and passed.

There being no further business the meeting adjourned at 9:50 P.M. followed by the serving of refreshments.

Louis J. Dubos, M.D., Secretary

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE

A meeting of the Southern Section of this organization was held Friday, May 24, at the Richardson Memorial Building on the Tulane Campus. The following program was presented:

1. The Use of Carbon Dioxide in Preventing Post-Exercise Orthostatic Circulatory Insufficiency. H. S. Mayerson, M.D., Department of Physiology, Tulane University School of Medicine.
2. The Enzymatic Decarboxylation of Glutamic Acid. Otto Schales, M.D., Alton Ochsner Medical Foundation.
3. Measures of Respiratory Activity with Isolated Nuclei from Avian Erythrocytes. R. M. Melampy, Department of Zoology, Louisiana State University.
4. Effect of Trauma on the Femoral Bone Marrow of Rabbits. Philip Pizzolato, M.D., (introduced by L. A. Toth), Department of Pathology, Charity Hospital, and the Department of Pathology and Bacteriology, L.S.U. School of Medicine.
5. Infectivity of Hemophilus Pertussis for the Developing Chick Embryo. Leah S. Shaffer, M.D., and Morris F. Shaffer, M.D., Department of Pathology and Bacteriology, Tulane University School of Medicine.
6. Reaction of the Rat Peritoneum to Acid Collodial Pigments. Ralph N. Baillif, M.D. (introduced by F. G. Brazda), Department of Anatomy, L.S.U. School of Medicine.

SOUTHERN MEDICAL ASSOCIATION

The next annual meeting of the Southern Medical Association will be held in Miami, November 4-7, 1946

NEWS ITEMS

We are indeed happy to announce that Dr. P. T. Talbot is rapidly recovering from his unfortunate accident.

Dr. Roy B. Harrison, Secretary-Treasurer of the Louisiana State Board of Medical Examiners has reported that 72 physicians were successful in examinations in medicine conducted by the Board in March. In addition, 43 physicians were granted certificates to practice medicine in Louisiana on the basis of reciprocity and one applicant was successful in midwifery.

Dr. Julius L. Wilson, associate professor of medicine at Tulane Medical School, has been made consultant of the tuberculosis division of the Veterans Administration in the southwestern states of the south. Twelve other outstanding phthisiologists have been selected to cover the other states.

It is with sadness that we record the death of Mrs. W. P. Bordelon, of Lake Charles, in a recent automobile accident. Dr. Bordelon is seriously injured and at the present time is in the Baptist Hospital of New Orleans in a critical condition.

Dr. Maxwell E. Lapham, Dean of the Tulane University School of Medicine was given on May 17 a certificate of merit by President Truman, at the White House, for his activities as executive officer of the National Procurement and Assignment Service.

TULANE GRADUATION

The annual graduation exercises of the Tulane University School of Medicine were held Wednesday, May 15, in McAlister Auditorium. There were 124 members in the graduating class. The annual commencement address was delivered by Dr. Raymond B. Allen, dean of the medical school of the University of Illinois and president-elect of the University of Washington. The honorary degree of doctor of laws was conferred upon Dr. Allen and upon our own loved Dr. Magruder. It is particularly gratifying to know that Dr. Thomas H. Watkins, of Lake Charles, was presented a membership in the Society of Paul Tulane Fellows an organization honoring the most distinguished members of the different schools of Tulane.

IVY DAY CELEBRATION

The annual Ivy Day exercises of the School of Medicine of Tulane University were held on Monday, May 13, at 11:00 a. m. on the uptown campus. The Ivy Day address was delivered by Dr. Harold Cummins, Professor of Anatomy.

Dr. Gilbert C. Anderson, the president-elect of the Louisiana State Medical Society presented the Walter Reed Memorial Medal to Dr. John K. Miller for his thesis on "Therapy of Trypanosome Gambiense Infection in Man." The Isadore Dyer Medal for scholarship was awarded to Dr. Royce C. Lewis, Jr. Dr. Ralph G. Smith, president of the Stars and Bars Chapter of Alpha Omega Alpha Fraternity presented the Querens-Rives-Shore Award to Dr. John R. Black for the best thesis on cardiology, his subject being "Bed Rest in Heart Disease." The Jacob C. Geiger Medal for the best thesis on a public health problem was presented to Dr. Allen L. Miller, the title of his paper being "False Positive Wassermann in Non-syphilitic Disease." The Sidney K. Simon Prize awarded to a student for the best thesis on diseases of the digestive tract, nutritional diseases or tropical medicine was presented to Dr. Bruce W. Alspach. The title of his thesis was "Biotin." The award given by the Professor of Medicine for the best thesis on a general medicine subject was presented to Dr. Douglas L. Gordon, the title of his paper being "Pathologic-physiology of Diabetes Mellitus." Drs. Joseph R. Hirsch, John W. Lafferty and James W. Lynn planted the ivy. Dr. Walter L. Howell made the presentation of the class gift with an acceptance of the gift by Dean L. J. Buchan acting for President Harris. Dr. Maxwell E. Lapham, Dean of the Medical School, made the closing remarks on the program.

BASE HOSPITAL NO. 64 HONORED

The United States Army 64th General Hospital which was recruited from the members of the faculty of Louisiana State University Medical School, was honored by a banquet on the evening of Saturday, May 11. At this time a citation was presented to the school. The presentation was made by Dr. Oscar Blitz who was head of the 64th General Hospital's medical service. Among the speakers were Dr. Charles J. Miangolarra who was chief of the surgical service of the hospital, President W. B. Hatcher of Louisiana State University, and Dr. George W. McCoy, Dean of the medical school.

The citation on the plaque reads "for superior performance of exceptionally difficult tasks and outstanding devotion to duty in the Peninsula Base Section for the period of August 1, 1944, to October 1, 1944."

The members of the Unit are to be congratulated upon this particular award. After practically four years in service the members of the Unit returning to civilian life should have the feeling that they had a difficult job which was exceptionally well done.

GRADUATE TRAINING PROGRAM IN THE NAVY MEDICAL CORPS

The Professional Division of the Bureau of Medicine and Surgery, Navy Department, has issued a five-page bulletin describing the graduate training program that the Navy proposes to put on for the instruction of the graduates of recognized medical schools. There will be three types of training: first, an internship; second, residency training for which nine hospitals have been approved by the appropriate American Boards, and lastly, continuation courses and special courses. Detailed information in regard to this postgraduate program of the Navy may be obtained from the Professional Division of the Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

ARMY IMMUNIZATION

In addition to the usual smallpox, typhoid, typhus and tetanus protective innoculations, all officers and civilian employees assigned to the European Theater are being immunized against diphtheria. It will be remembered that a severe epidemic of this disease has raged in Europe in the past winter.

ARMY INTERNSHIPS

The Army is offering internships in the U. S. Army Hospitals starting July 1, 1937. Men who qualify for appointment will be given a reserve commission in the Army Medical Corps and will be paid approximately $3,000 a year. This seems to be a wonderful opportunity which no other internships afford, namely to serve under a group of good men and at the same time be paid most liberally. Applications for internships must be in the Surgeon General's office before June 15, and recommendations must go through the Deans of Medical Schools.

HEALTH AND ACCIDENT UNDERWRITERS CONFERENCE

This Conference has published a bulletin of some four pages entitled, "The American Medical Association Medical Care Program." It outlines in considerable detail the program of the American Medical Association for the care of the American people. Of course the important feature of the bulletin is that certain insurance companies are prepared to issue insurance through county medical societies and state medical societies rather than to individuals.

AMERICAN LEGION NEWS

The American Legion and Legion Auxiliary have allotted the sum of $50,000 to combat rheumatic fever and rheumatic heart disease. Dr. Leonard G. Rowntree is chief medical advisor and chairman of the medical advisory board of the American Legion.

THE AMERICAN CONGRESS OF PHYSICAL MEDICINE

This organization will hold its twenty-fourth annual scientific and clinical session September 4-7, inclusive, at the Hotel Pennsylvania in New York. Scientific and clinical sessions will be given each day. All sessions will be open to members of the medical profession in good standing with the American Medical Association. In addition to the scientific sessions, the annual instruction courses will be held September 4, 5, and 6. These courses will be open to physicians and to therapists registered with the American Registry of Physical Therapy Technicians. For information concerning the convention and the instruction course, address the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce reported that for the week ending April 13 there were 136 deaths in the City of New Orleans as contrasted with 132 the previous week. Eighty-five of these deaths were in the white population and 51 in the negro with nine of them occurring in children under one year of age. For the week which closed April 20 there were only 120 deaths recorded, divided 84 white, 36 colored and eight children under one year. The very small number of negro deaths for the previous week increased to 60 for the week closing April 27 bringing the total deaths to 139. The figures are considerably under the three-year average for the corresponding week. Again there were only eight children included in the total number of deaths which are under one year of age. For the last week for which the record is available, ending May 4, the number of deaths reached the astoundingly low number of 110. Seventy-two of these deaths occurred in the white, 38 in the negro population and five in infants. This was really a quite remarkable figure, much below the three-year average and that in spite of the fact that the city has increased its population very considerably in the last several years.

INFECTIOUS DISEASES IN LOUISIANA

The weekly morbidity report for the State of Louisiana for the week ending March 30, showed measles leading all other reportable diseases, with a total of 310 cases. There were also a large number of cases of influenza reported this week, 109 in all. Other diseases reported in numbers greater than ten included 47 cases of pulmonary tuberculosis, 23 of chickenpox, 16 of unclassified pneumonia and 13 of scarlet fever. A case of smallpox was reported from Allen Parish this particular week. A mild epidemic of measles seemed to be prevalent in the state during the early weeks of April. For the week which closed April 6 there were 288 cases reported. Very remarkable indeed is the fact that there were also 176 cases of "unclassified pneumonia" listed. Respiratory infection seemed to be on a rampage this week as there were also recorded 77 cases of pneumococcic pneumonia and 60 cases of influenza. There were also listed 155 cases of cancer, 38 of pulmonary tuberculosis, 36 of German measles, 25 of hookworm infestation, 24 of septic sore throat, 17 of amebiasis, 16 of scarlet fever, 15 of mumps, 13 of malaria and 10 of bacillary dysentery. Another surprising feature of the report was the listing of 29 cases of rheumatic fever. The measles epidemic apparently was waning as the week of April 13 found only 101 cases reported. The respiratory tract infections seemed to disappear with a rapidity which was astounding; only 15 cases of influenza being reported and only a few of the pneumonias. There were, however, 42 cases of pulmonary tuberculosis, as well as 20 of mumps and 13 of chickenpox. Two cases of poliomyelitis were discovered, one in Jefferson and one in Livingston Parish. The week closing April 20 was noted for the few number of reportable diseases listed. There were only three diseases, measles with 51 cases, pulmonary tuberculosis with 41 and hookworm infestation with 25, that occurred in numbers greater than ten. One patient with poliomyelitis was reported from Lafayette Parish.

PROGRESS OF LOUISIANA STUDY OF CHILD HEALTH SERVICES

The Louisiana Study of Child Health Services, sponsored by The American Academy of Pediatrics and conducted by the pediatricians of the State was called to the attention of the physicians in an editorial in last month's issue of this Journal. Since that time this Study was presented to the House of Delegates of the State Medical Society on May 6 and received unanimous approval. It has also received approval from the Louisiana State Dental Society.

The Study has been presented to and is receiving the support of a number of other organizations, including the Woman's Auxiliary to the State Medical Society, Louisiana State Board of Health, Louisiana State Tuberculosis Association, the Louisiana Chapters of the National Foundation for Infantile Paralysis, the P.T.A., American Legion and a number of other civic organizations interested in child health. An advisory committee has been appointed, consisting of representatives from these various organizations and the State Medical Society, which will render considerable assistance in publicizing the Study.

The Study of pediatric facilities in the hospitals is well under way. Much of the hospital study is being conducted in conjunction with the present State Hospital Survey, through the kind cooperation of the State Hospital Commission.

The Study of community health services, both official and voluntary, is being conducted by the State Health Department under the supervision of Dr. David Brown and Dr. Trois Johnson.

Letters have gone forward to each physician in private practice from the various pediatricians in the state, requesting their cooperation in filling out individual information sheets. Within a short time these letters will be followed by the schedules from Dr. O. C. Thomas, Executive Secretary of the Study of Child Health Services in Louisiana. The purposes and conduct of this Study will be greatly facilitated if each physician will complete and return the schedule at the earliest possible moment.

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

A meeting of the American Association for the Study of Goiter will be held at the Drake Hotel, Chicago, on June 20-22, including business, general and scientific sessions.

WOMAN'S AUXILIARY

REPORT OF PRESIDENT

Fellow officers, chairmen of standing committees and members of the Woman's Auxiliary to the Louisiana State Medical Society—it now becomes the duty of your president to give to you an account of her stewardship.

The routine business of the Auxiliary has been attended to promptly.

Chairmen of standing committees and councilors were appointed for the year and the names and addresses of the entire Board was sent to the Auxiliaries of the American Medical Association and the Southern Medical Association.

A letter of congratulation was written on behalf of the members of the Louisiana State Medical Auxiliary, to Mrs. Wiley R. Buffington of New Orleans, the new president-elect of the Southern Association Auxiliary.

A subscription to the Bulletin was sent to each parish president and other subscriptions sold to auxiliary members.

Stationery was printed and mailed to each Board member and parish president.

After receiving Dr. Fuchs' approval of the projects to be sponsored by us for the year, letters were written to each parish president listing these projects and enclosing a list of the names of our parish presidents.

We now have 581 paid memberships. An increase of 47 members since last year.

A balance of $702.48 in our treasury.

When your present officers and chairmen assumed office last spring, the world was still at war. Several months later, peace was declared.

We could now anticipate a gradual return to normalcy. Doctors and their families would be returning to their homes and their patients. New doctors' wives joined their local auxiliaries.

A meeting of the Executive Committee was called to discuss the advisability of printing a year book supplement. Such a supplement could furnish scant new information, so it was decided to have our treasurer and our printing chairman gather all available informative material concerning old members; newly elected officers, re-activated auxiliaries and new members and have it in readiness for the next administration to have printed into a new and complete Year Book. This work has been done. We are deeply indebted and very grateful to Mrs. Daniel Murphy, who has accomplished for us this, and many other fine services.

Our State Society president, Dr. Fuchs, and our National Auxiliary president, Mrs. David Thomas, both requested me to urge our members on to greater effort in combating the sponsoring of our Government Compulsory Health Insurance Plan, or, the Wagner-Murray-Dingell bills by large organized groups of women.

This I have done by letters, through the New Orleans Medical and Surgical Journal and on my visits to our auxiliaries.

Upon receiving from Mrs. Thomas, the information that the Young Women's Christian Association would discuss and probably sanction this bill at their recent convention in Atlantic City, I telephoned and then wrote to the president of the New Orleans unit, Mrs. Harold Rhodes, and to each of the twelve delegates going to the convention, telling them that the doctors of this country were unalterably opposed to this legislation.

On the morning of the convention, ten telegrams were sent by members of the Orleans Parish Auxiliary to Dr. Emily Hickman who was to present the Bill to the Assembly, stating our opposition to this legislation.

Mrs. O. B. Owens and Mrs. H. O. Barker of Alexandria attended this convention and through their thorough knowledge of this subject and their untiring efforts in presenting reasons for the medical profession's opposition to it, they were largely responsible for the bill being tabled for further study.

The Baton Rouge Auxiliary arranged as their February program a debate between students of the university and high school on Socialized Medicine. This proved to be an interesting program. Caddo sponsored the appearance of an informed attorney in an address on Socialized Medicine before 750 guests, who were enthusiastic and appreciative of the information they received. The plea of our doctors and medical organizations for assistance in this fight has brought a magnificent response from our members and very satisfactory results.

The cancer control campaign has received active support and full cooperation from all of our auxiliaries both financially and otherwise. Louisiana, because of its 1945 record, was selected as the "Model State" in the cancer control drive.

Doctors' Day was happily celebrated with dinners, barbecues, newspaper cartoons and editorials. Substantial donations were made to worthwhile philanthropic projects, one auxiliary reporting a gift of $100 to their General Hospital Fund and another a gift of $25 to their Indigent Widow's Fund in honor of their doctors.

Hygeia contests were sponsored in schools and 138 subscriptions were sold. This valuable magazine was also placed in many libraries and schools throughout the state.

Two auxiliaries have returned to active status, Terrebonne and Iberia. Fourteen thousand, four hundred and seventy-three hours of work and splendid financial contributions were given to Red Cross.

One of our members has received a special citation for 1000 hours of service and another a Distinguished Service Medal.

One member has four awards from U. S. O.

Fifteen layettes and 60 mattress protectors were made for indigent mothers, in one hospital.

The Louisiana Crippled Children's Fund and the Infantile Paralysis Fund received valuable assistance and many contributions.

Three underprivileged children are fed and one clothed by one of our groups.

A toy loan library is operated by another auxiliary, which also sponsors a local blood bank; distributes toys at Christmas time to all of their hospitalized children regardless of color; has a fund of $516 to be used in the anti-tuberculosis work. With this, they feed and clothe three half-orphaned children whose mother is tuberculous.

The anti-tuberculosis campaign is helped by all of our auxiliaries.

Our history book is beautiful and most deserving of your attention.

The Indigent Widow's Fund has almost reached the $500 mark and we can now consider giving assistance to a worthy case among us who may be in need of our help. Our chairman reports $437 on hand.

Our capable chairmen of Organization, Legislation and Revision of By-Laws have served us willingly and well.

Printing has been promptly and efficiently handled.

Our Press and Publicity Chairman wrote often to each auxiliary requesting news and had it published in our State Journal.

The Public Relations and Program Chairman worked valiantly to furnish all available literature and information on the Wagner-Murray-Dingell bills to each parish auxiliary. Letters were written suggesting programs featuring speakers on this vital subject.

The visiting wives of doctors attending the Graduate Medical Assembly were delightfully entertained and many letters of sincere appreciation and praise received. These contacts with groups from many other states promote unity, understanding and closer relation within the medical profession.

Ladies, this is your Auxiliary. These are but a very small part of your accomplishments.

The capable, industrious and earnest effort of every officer, chairman and individual member of this organization has been outstanding.

Your sympathy and encouragement, your tolerance and your spontaneous courtesy and helpfulness to me at all times I shall always remember with a deep abiding gratitude and reverence.

Mrs. Arthur Long, your new president, will lead you to greater accomplishments.

I congratulate her and pledge to her your and my full cooperation.

The honor and privilege of having been your president is indeed a richly rewarding service.

My heartfelt thanks will be with you always.

Respectfully submitted,
Mrs. Paul G. Lacroix.

MRS. ARTHUR LONG HONORED AT LUNCHEON

Mrs. Arthur Long of Baton Rouge, the new president of the Woman's Auxiliary to the Louisiana State Medical Society, was honored Wednesday, May 8, when the members and delegates of the Woman's Auxiliary to the Louisiana State Medical Society entertained at a luncheon in the Mirror Room, Hotel Bentley. Mrs. McGinty McBride gave the invocation. Mrs. H. P. Forsyth, presiding, introduced Mrs. Long, the guest of honor, and Mrs. Paul G. Lacroix, of New Orleans, the president of the state group for the past year. Other guests seated at the speakers' table were Mrs. Rhett McMahon of Baton Rouge, Mrs. Val Fuchs of New Orleans, Mrs. Carroll Gelbke of Gretna, Mrs. A. A. Herold and Mrs. Clarence Erickson of Shreveport, Mrs. Aynaud F. Hebert and Mrs. George J. Taquino of New Orleans, Mrs. Earl Jones and Mrs. D. B. Barber of Alexandria.

The state officers were introduced as follows: Mrs. J. W. Warren of New Orleans, president-elect; Mrs. D. B. Barber, Pineville, first vice-president; Mrs. L. L. Davidge of Shreveport, second vice-president; Mrs. C. P. Gray of Monroe, third vice-president; Mrs. T. G. St. Martin of Houma, fourth vice-president; Mrs. Carroll Gelbke of Gretna, secretary; Mrs. G. I. Kuehnle of Baton Rouge, treasurer; Mrs. Frank Jones of Baton Rouge, corresponding secretary. Mrs. McGinty

McBride was recognized as the president of the Alexandria Auxiliary.

Honor was paid to those ladies responsible for the lovely flowers and entertainment during the three-day convention, who were Mrs. L. D. Gremillion, chairman of the luncheon; Mrs. H. C. Gahagan, and Mrs. J. H. Landrum, decorative committee for the luncheon; Mrs. King Rand and Mrs. Clarence Pierson floral arrangements for the tea; Mrs. H. Aubrey White for the artistic arrangements at the dinner dance; Mrs. James A. White, Jr., and Mrs. O. B. Owens, chairmen of the tea.

Attending the luncheon were members and delegates to the Woman's Auxiliary to the Louisiana State Medical Society and wives of the doctors of the Veteran's Administration in Pineville.

DELEGATES ATTENDING MEDICAL CONVENTION HONORED

Among the various events given in honor of the many interesting delegates attending the convention of the Woman's Auxiliary to the Louisiana State Medical Society, held in Alexandria, was the tea given at the Y.W.C.A. building on Second Street, with members of the Woman's Auxiliary to the Rapides Parish Medical Society serving as hostess.

The guests were greeted by Mrs. James A. White, Jr., and receiving with Mrs. Earl Jones were Mrs. Paul Lacroix of New Orleans, Mrs. Arthur Long of Baton Rouge, Mrs. Rhett McMahon of Baton Rouge, Mrs. D. B. Barber, Alexandria, Mrs. Carroll Gelbke of Gretna and Mrs. Arthur A. Herold of Shreveport.

Mrs. A. L. Culpepper and Mrs. McGinty McBride poured punch during the first hour, and Mrs. Paul King Rand and Mrs. Clarence Pierson during the second hour.

During the calling hours of 4 to 6 o'clock, those assisting in serving were Mesdames L. D. Gremillion, E. R. Pincus, O. B. Owens, H. O. Barker, Ralph Lampert and Marguerite M. Bonnette. An entertaining musical program was presented by Mesdames Frank R. Hayden, A. M. Creed, J. R. Bell and H. P. Forsyth.

BOOK REVIEWS

A Manual of Tropical Medicine: Prepared by Thomas T. Mackie, M. C. and others under the auspices of the Division of Medical Sciences of the National Research Council. 287 Illustrations. Philadelphia, W. B. Saunders Co. 1945. pp 227, illus. Price, $6.00.

Profusely illustrated with excellent charts, diagrams, photographs and photomicrographs and lacking detailed bibliography, this book contains within its 683 pages all the essential information relative to diseases encountered in the tropics. The inclusion of placards used for instructing the troops in the pictorial outline of the epidemiology of specific infections does not decrease from their effectiveness. Moreover, it is refreshing to note a complete absence of the old familiar photographs of many conditions. Uniform charts show clearly the known distribution of the important diseases.

More than one-fifth of the contents is devoted to the insect vectors, as is quite proper, and the material is presented in as simple a manner as possible. Pathology is briefly but concisely given as are methods of diagnosis and treatment. Brief descriptions of mycotic infections are accompanied by excellent photographs.

In such a condensed version of the subject no doubt various workers will find cause to comment on the omission of certain features and the inclusion of others. Under this heading might be questioned the propriety of perpetuating the term *pre-blackwater* state, especially when our understanding of the disease itself is so vague.

This very timely work may well be recommended as the essentials of tropical medicine presented in a very palatable form.

A. J. Walker, M. D.

Manual of Diagnosis and Management of Peripheral Nerve Injuries:By Robert A. Groff, M. D. and Sara Jane Houtz, B. S. Philadelphia, J. B. Lippincott Company, 1945. pp. 188, illus. Price, $6.00.

This manual of diagnosis and management of peripheral nerve injuries has been prepared "to provide the physician and the physical therapist with a concise text containing the essential facts for the understanding, identification, and management of injuries to the peripheral nerve injuries."

The text is divided into two parts. The first part consists of a discussion of nerve injuries including diagnosis and surgical treatment and the second part comprises an illustrated outline of peripheral and cranial nerve function. In this latter section the physiologic action of the various muscles has been explained by means of diagrams. Also included are elaborate anatomic drawings showing nerve relationships at different levels in the extremities.

Adequately indexed, profusely illustrated and simply written, this small monograph should prove instructive to the physical therapist, the general practitioner and the surgeon.

Dean H. Echols, M. D.

Dietotherapy: Clinical Application of Modern Nutrition: Edited by Michael G. Wohl, M. D., Philadelphia, W. B. Saunders Co., 1945. pp. 1029. Price, $10.00.

Dietotheraphy is a difficult and extensive subject. The editor, Michael Wohl, showed good judgment in his selection of 58 excellent collaborators. A review of the renowned contributors starts one off with a good impression of this publication. It is well edited, each authority has handled his subject in a pleasingly thorough manner.

The 987 page text is divided into three parts. The first section is devoted to normal nutrition, part two considers nutrition in periods of physiologic stress, nutrition in disease forms the basis for the third and large section of four hundred eleven pages.

The physiologist, biochemist and pharmacologist join with research worker, pathologist and clinician in covering every aspect of normal nutrition including water and mineral metabolism as well as vitamin requirement as related to economic and industrial standards. The more scientifically minded and the researcher will find this interesting presentation remarkably recent in reference.

The periods of physiologic stress included are pregannc, infancy and childhood, geriatrics related to infection and immunity and athletic effort. It becomes evident that dietotherapy has specialization of broad scope often neglected by those in specialized fields.

These first 225 pages are therefore more interested in technical factors but in a fashion that is readable and interesting and has many practical issues. The third section is clinical and will be of interest to every internist. A portion is devoted to nutritional dentistry. The gastroenterologist finds considerations related to the stomach, the intestinal tract and to the liver and biliary tract

The dietary treatment of diabetes mellitus is well covered. Nutrition in nephritis, in relation to urology, in cardiovascular disease, in the arthritidies, in Addisonism, in obesity and leanness, in the anemias and in fectious disease each is meticulously applied.

Rowe covers the allergies. Dermatologic consideration has no niche. The neurophychiatrist has not been neglected.

Nutritional requirement in surgery and the amino acids are subjects new to nutritional text discussions which have advonced into proper prominence and are emphasized.

Throughout, this publication is thoroughly a classic. Each contributor has been well selected, each has given both technical and clinical consideration to his subject. A rather fair evaluation of the vitamins is given, as usual; perhaps too much space has been devoted to the subject. The social service workers will find this an excellent book for their work and research. The specialist will find, regardless of his field of interest, some section especially applicable to his work.

Fortunately the general practitioner will also find this a valuable contribution for although too little space is devoted to outlining diets in a dispensable form nevertheless an adequate coverage is present.

GORDON MCHARDY, M. D.

Prescribing Occupational Therapy: By William Rush Dunton Jr., M. D., Springfield, Ill., Chas. C. Thomas, 1945. pp. 151. Price, $2.50.

In this carefully and symphathetically planned manual occupational therapy is defined as "any activity, mental or physical, definitely prescribed and guided for the distinct purpose of contributing to, and hastening the recovery from, disease or injury." It is no cure-all but one of the many aids to the recovery of a patient and an adjunct to other forms of treatment, and it is believed that the creation of a pleasant mental attitude or emotion, and the stimulation of interest, are the bases for successful occupational treatment.

It is necessary that the physician know the principles governing the application of occupational therapy in order that he may prescribe it understandingly and, in Chapter 1, the author outlines the many factors and considerations to be observed.

Occupational therapy has been used much longer in mental disorders and, at present, is being applied more extensively in this type of illness than in any other group and here we are confronted with the most difficult problems of applying occupational therapy because mental patients are usually so "let down" and have undergone so much character change that it is often necessary to conduct many experiments before the right occupation in the correct dosage is found.

Chapter 4 has to do entirely with occupational therapy in mental disorders and it is an excellent presentation of the subject in which specific forms of therapy are applied for certain manifestations—the therapy is recommended for the symptoms rather than for the disease entity.

Probably never before have the principles on which occupational therapy depend been so comprehensively set forth as in this volume. It will serve to orient the physician exactly in this field. It gives a concise statement of the general principles involved and is an able discussion of the curative value of work. This should become the most useful single book in any mental hospital and of utmost value to all physicians, especially neuropsychiatrists.

C. P. MAY, M. D.

Government In Public Health: By Harry S. Mustard, B. S., M. D., LL.D. New York, The Commonwealth Fund, 1945. Pp. 219. Price, $1.50.

This book, one of the studies of the New York Academy of Medicine Committee on Medicine and the Changing Order, is written with the usual clarity, conciseness and vigor one learns to expect in any of Dr. Mustard's writings.

Discussion begins with an analysis of the character of public health problems; continues with the development and function of public health practice at the federal, state and local levels; and concludes with a summary of present-day trends and a consideration of the measures to be weighed for effective future development.

Dr. Mustard recognizes and stresses the fact that the bulk of actual health service must be administered at the local health level and urges the wider application of preventive measures in medical practice. He also recognizes the effects of political and social evolution as they apply to public health, views them as nearly objectively as possible, and confesses to a belief that a better public health will result from this changing order.

RALPH H. HEEREN, M. D.

Diseases of the Nose, Throat, and Ear: including Bronchoscopy and Esophagoscopy. Edited by Chevalier Jackson, M. D., Sc. D., LL. D., F.A.C.S., and Chevalier L. Jackson, M.D., M.Sc., F.A.C.S.; with the collaboration of sixty-four outstanding authorities. Philadelphia, W. B. Saunders Company, 1945. Pp. 844. Price, $10.00.

This is a new departure in text books of diseases of the ear, nose, and throat. Approximately half of its 795 pages of text is devoted to laryngology, bronchology, and esephagology. This gives adequate and excellent discussion of these subjects, but opens the question as to whether too much space has been devoted to these departments in a general text book on diseases of the nose, throat and ear. The omission of the technique of laryngofissure and a skin graft covered stent in the treatment of cicatrical stenosis of the larynx, might call for minor criticism.

In the usual ear, nose and throat sections of the text, the subject matter is well presented. An exception is the inadequate space given to the diagnosis and treatment of allergy. In view of the large number of patients who come to the rhinologist's office for relief from allergy, it would seem that more space should be devoted to this subject in standard texts of diseases of the ear, nose and throat.

The illustrations are excellent and the printing clear. Typographical errors are not found. The book is recommended as a text for the student and the practitioner.

H. L. KEARNEY, M D.

PUBLICATIONS RECEIVED

Cloud Inc., Chicago: A Blind Hog's Acorns, by Carey P. McCord, M. D.

Froben Press, New York: Arthritis and Rheumatism in General Practice, by Bernard Aschner, M. D.

Lea & Febiger Philadelphia: Clinical Laboratory Diagnosis, by Samuel A. Levison, M.S., M.D., Ph. D. Exercises in Electrocardiograph Interpretation, by Louis N. Katz, A.B., M. A., M.D., F.A.C.P. Electrocardiography, by Louis N. Katz, A.B., M.A., M.D., F.A.C.P.

MacMillan Company, New York: Principles and Practice of Tropical Medicine, by L. Everard Napier. Cornell Conferences on Therapy, Volume I, Harry Gold, M. D., Managing Editor.

Mead Johnson & Co., Evansville, Indiana: Paregon.

C. V. Mosby Company, St. Louis: Fractures, Dislocations, and Sprains, by John A. Key, B.S., M.D and H. Earle Conwell, M.D., F.A.C.S. Synopsis of Pathology, by W. A. D. Anderson, M.A., M.D., F.A.C.P.

W. B. Saunders Co., Philadelphia: Preoperative and Postoperative Treatment, by Lt. Col. Robt. L. Mason, M.C., A.U.S. and Harold A. Zintel, M.D.

Charles C. Thomas, Springfield Illinois: Journal of Gerontology, Volume I, No. 1, Part 1 and 2.

Williams & Wilkins Company, Baltimore: Modern Management in Clinical Medicine, by F. Kenneth Albrecht, M.D.

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